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BETTER FRUIT

VOLUME X JULY, 1915 NUMBER 1

Photo by J. E. Mock, Rochester

R. G. PHILLIPS, ROCHESTER, NEW YORK
Secretary of the International Apple Shippers' Association.

The International Apple Shippers' Association will hold their Twenty-first Annual Convention and Apple Exhibit at the Sherman Hotel, Chicago, August 4, 5 and 6. This association has accomplished wonders in assisting the selling end of the apple business. Mr. R. G. Phillips devotes his entire time to the association, being its present secretary. He has done such excellent work in building up and assisting the association that we herewith present his picture on the cover page in order that the fruit growers may become better acquainted with Mr. Phillips, who is esteemed very highly by all those who know him.

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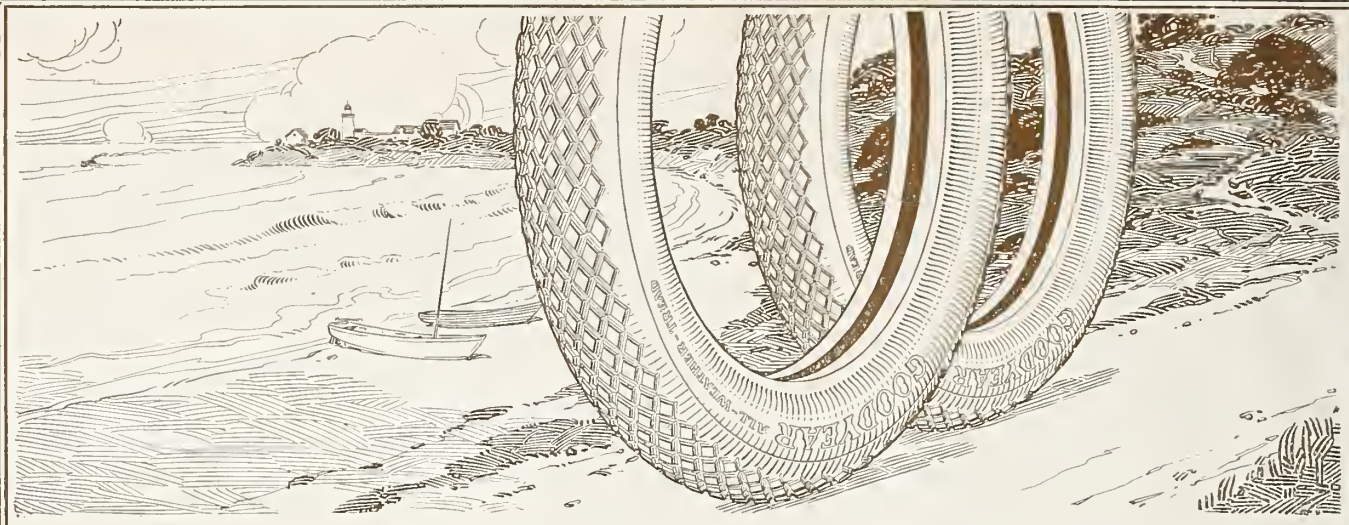

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BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

The Development of the Fruit Package

By E. D. Lake and W. B. Arens.

THE object of this article is to trace the development of the package of the apple, pear, peach, plum and cherry from the time these first appeared on the markets of the United States until the present time; and from the past and present tendencies prophesy what packages the fruit growers of the future will adopt. In the publications of the past which have been available little attention and space has been given to the discussion of the fruit package, which now has become an important phase of the marketing problem. Judging from this, the growing of the fruit was the all-important matter and the marketing was a secondary consideration. The marketing of fruit until recently was a simple matter, since the home markets were able to handle all of the fruit grown locally, and for this reason, and due to the fact that keen competition did not exist, the fruit was placed upon the market in almost any kind of package. Before the year 1840 there were comparatively few commercial orchards of any sort in the United States. Most of the fruit grown at that time was grown in the home orchard, for home use, and only the surplus was marketed. Most of this surplus was carried to the markets in the farmer's wagon and sold direct to the consumer, by peck or bushel, the package not being given with the fruit. For the city retail trade the fruit was marketed in most any package available. Innumerable crude packages have been found upon the markets, varying in sizes and description and being made of every kind of materials.

It was with the rapid development of the fruit industry between the years 1845 and 1860, when hundreds of commercial orchards were coming into bearing throughout the United States, that the question of the fruit package first became of importance. The tremendous amount of fruit being thrown upon the market between the years 1855 and 1860, much more attention was given than formerly to the marketing of these crops. The wholesale market rather than the retail played a larger part in the fruit industry, causing a proper development of the fruit package. The fruit men realized that it was not altogether the fruit which caused a sale, but that the package played a very important part. The fruit was not only displayed to better advantage, but also arrived on the market in better condition. Since the sale of the fruit was handicapped by the use of discolored second-hand packages, the trade came to demand the "gift" package more and more. During the last half century there has been a general embetterment of the fruit package, until today we find many novel as well as neat and useful packages upon the market.

In the latter part of the eighteenth century a shipment of apples was made from the United States to Benjamin Franklin, who was then in Europe. The fruit, through careful packing, arrived in good condition; this showed the possibilities of the foreign development of the fruit industry and necessitated the use of a strong, substantial package for shipping purposes.

Until recently the form of apple package was chiefly the barrel, which now has a more or less definite size and shape. Formerly there were wide extremes in the type of the barrels found on the various markets, ranging from small kegs to hogsheads. Thus it could be seen that many of these would be wholly unsuitable. Apples have been packed in barrels ever since orcharding became a commercial branch of farming. The barrel is the standard package for apples east of the Rockies, and from all indications it will continue to be so for some years to come. In some localities the so-called half barrel has been used for marketing apples on a small scale. The half barrel is nothing more than a small barrel which holds about one-half of the standard apple barrel. Its use is very limited. For high grade fancy apples and for special markets some of the growers are packing apples in the Oregon standard apple box, but the box trade represents insignificant parts of the apple business in the East. Georgia is an exception to this rule, as it packs most of its apples in the Northwestern standard box. The bushel and half-bushel hampers are used for shipments of early apples for short distances, not over two or three hundred miles.

There is a third class of package for apples which is just now coming into prominence and which is bound to become of more and more importance. That is the small retail "take-home" package holding from a few quarts up to perhaps a half bushel. These packages are principally of two types, either the basket or carton. They have the advantage, from the standpoint of the consumer, that they can be easily carried in the hand; that they keep the fruit in good condition, and that they hold so little fruit that the question of storage is not important. Thus they obviate the greatest difficulty which is experienced with the barrel and even with the box, namely, that the ordinary household cannot use all of the apples before they begin to decay. An additional advantage of the small package being attractively packed is that the fruit can be much better displayed. In this regard, F. C. Sears, professor of pomology, Massachusetts Agricultural College, might be quoted: "There is also among those who grow very fancy apples a movement to try a still smaller package, particularly of the pasteboard carton type. These have been taken up because the barrel and Western box both bruise the apples too much. A few growers are also trying a carton which holds practically a bushel and which is supplied with partitions similar to an egg case. At a recent meeting of our association (Massachusetts Horticultural Association) we had such a package on exhibition which had been shipped from Virginia to Brockton in this state, then back to Boston, then up to Worcester, where our meeting was held, yet the apples arrived in perfect condition."

West of the Rockies, including Colorado, the apples are nearly wholly handled in boxes. The first shipment of apples from Oregon to distant points was made in 1853, when large boxes bound with iron straps were sent to San Francisco by steamer. The apples sold as high as $2 a pound. The Oregon standard and California special boxes are used to the exclusion of all others. It is a fact that the Western apple growers market their apples in boxes, in the markets of Eastern cities, and these same markets prefer to have the Eastern apples packed in barrels. It cannot be explained why this should be the case, unless it is because the Western apples are of such superior quality to be demanded by special fancy

Features of this Issue

THE DEVELOPMENT OF THE FRUIT PACKAGE

THE APPLE AS A FARM PRODUCT; HISTORY AND PRESENT STATUS

THREE YEARS OF PRACTICAL EXPERIENCE WITH HOME CANNING

COVER CROPS FOR BEARING IRRIGATED ORCHARDS

MARKETING THE APPLE

trade. The future tendency will probably be that the East and West will continue to use their respective packages with but minor variations. One fact stands out as being established beyond question, namely, that if boxes are to be used at all, the fruit has to be above the average in quality and properly graded, and the whole package must be made attractive. Without these attributes fruit cannot be placed profitably in any market. The cost of box packing makes this type of package almost prohibitive in the handling of the lower grades of fruit. The slatted box and the barrel have been suggested as a means of overcoming this difficulty in the Northwest. The following tables from Bailey's "Farm and Garden Rule Book" show the legal weights to the bushel of apples and the legal sizes of apple boxes and barrels in the several states named; also the usual standard (not legal) sizes of apple boxes and the heaped bushel expressed in cubic inches in such states as have expressed the capacity of the heaped bushel in that form. All of these boxes, where actually used, are subject to considerable variation in capacity, resulting from the use or non-use of cleats under the covers.

BOX AND BARREL SIZES, AND WEIGHTS PER BUSHEL.

Arkansas .....Green apples 50 lbs. per bu.
Box size: 20x12x9—lawful bushel measure.
Connecticut .....Apples..... 48 lbs. per bu.
Florida .....Green apples 48 lbs. per bu.
Iowa .....Apples..... 48 lbs. per bu.
Kansas .....Green apples 48 lbs. per bu.
Maine .....Apples..... 44 lbs. per bu.
Box size: 20x11x10 inches—2250 cu. in.; standard bushel box.
Barrel size: Head 17⅛, staves 28½, bulge 64 inches—3 bushels.
Maryland
Box size: 2212 cubic inches.
Barrel size: 6253¾ cubic inches.
Massachusetts ...Apples..... 48 lbs. per bu.
Michigan .....Apples..... 48 lbs. per bu.
Barrel size: Heads 17¼, staves 27 inches, or flour barrel size.
Nebraska .....Green apples 48 lbs. per bu.
New Jersey.....Apples..... 50 lbs. per bu.
New York .....Apples..... 48 lbs. per bu.
Barrel size: Head 17⅛, staves 28½, bulge 64 inches—100 quarts.
Minnesota .....Green apples 50 lbs. per bu.
Missouri .....Apples..... 48 lbs. per bu.
Barrel size: Heads 17¼, staves 28½, diameter center inside 20½ inches.
North Carolina ..Green apples 48 lbs. per bu.
North Dakota....Apples..... 50 lbs. per bu.
Ohio .....Apples..... 50 lbs. per bu.
Barrel size: Head 17⅛, staves 28½, bulge 66 inches.
Oregon .....Apples..... 45 lbs. per bu.
Standard box: 10½x11½x18—2173½ cu. in.
Standard box: 20x11x10—2200 cu. in.
Tennessee .....Green apples 50 lbs. per bu.
Texas .....Apples..... 50 lbs. per bu.
Vermont .....Apples..... 46 lbs. per bu.
Virginia .....Apples..... 45 lbs. per bu.
Barrel size: Head 17⅛, staves 27½, bulge 64 inches.
Washington .....Green apples 45 lbs. per bu.
Box size: 10½x11½x18 inches.
Wisconsin .....Apples..... 48 lbs. per bu.
Barrel size: 100 quarts.

OTHER APPLE BOX SIZES.

California 40-lb...20¾x10⅜x9⅛...1965 cu. in.
California 50-lb...20¾x11¼x10¾..2393 cu. in.
Canadian Legal...20x11x10.....2200 cu. in.
Colorado .....18x11x12.....2376 cu. in.
Washington Specl.20x11x10.....2200 cu. in.
N. W. Special.....20x12x10.....2400 cu. in.

LEGAL HEAPED BUSHEL CAPACITIES.

Connecticut .....2564 cu. in.
Kansas .....2564 cu. in.
Washington .....2564 cu. in.

Courtesy of Southern Pacific Railway

Hay Field, Western Oregon

The history of the pear package does not differ extremely from that of the apple, in that development was along practically the same lines. It is true that the pear industry has not developed nearly as rapidly as has the apple. It has been until recently more of a local proposition with pears, since they will not stand shipping and rougher treatment, nor keep as well in cold storage as will the apple.

On account of the different characteristics of the pear of the East and of the West, and the uses to which the pears are put, the packages would necessarily vary considerably. The half bushel peach basket is commonly used in handling the pear crop for delivery to consumers in the Eastern states. The barket usually goes under the name of five-eighths bushel. This basket, with a slatted cover, is also very largely used in shipping by steamer and otherwise to Baltimore and Philadelphia. The pear box with a middle partition and holding from three pecks to one bushel is very commonly used in the Eastern states. This box is rather attractive and helps to sell the fruit.

In New York and the New England states bushel kegs are very largely used for shipping Bartletts, Anious and other pears. A still larger package for shipping pears, smaller and with less bulge than the common apple barrel, holds 2¼ bushels. The Le Conte and Kieffer pears are frequently shipped in regular apple barrels. Sometimes boxes are used for the fancier grades of fruit. There seems to be a diversity of opinion among Eastern growers regarding the most desirable type of package in placing this fruit upon the market. Probably the best package for the local market is the bushel box or the half-bushel hamper basket. For the distant market, varieties like the Kieffer and Duchess seem to be preferred in barrels. A few of the progressive growers have discovered that the basket can be packed with regular packs almost as conveniently as the box, and that not only are the carrying qualities of the fruit enhanced, but the basket presents a much more pleasing appearance.

The pear growers of the Pacific Coast pack most of their fruit in boxes, as is the case with apples. Most of the pears grown on the Pacific Coast are marketed in the Eastern cities. The box probably being the most economical and efficient package for long distance shipping, has for this reason come into general use. The smaller varieties such as the Seckel are packed in half boxes, and the larger pears such as the Bosc and Anjou are marketed in packages that are somewhat smaller than the standard apple box. The ideal package for the pear will, in all probability, be a half box, somewhat shorter than our standard apple box, practically such as is used by California packers. The following table shows dimensions of some of the pear packages in common use:

Northwest standard pear box—8½x10½x18¼
Pear half box—11¼x11½x18½.
Vermont—58 lbs. per bushel.
Iowa—45 lbs. per bushel.
Indiana—2150 cubic inches.
Minnesota—45 lbs. per bushel.
New Mexico—Size box, 18x11½x8 inches; 48 lbs. per bushel.
New York—48 lbs. per bushel; 100 quarts per barrel.
U. S.—48 lbs. per bushel.
R. J.—48 lbs. per bushel.
California pear box—9x11¾x19¾; 50 lbs. per box.
California pear box (export)—4½x11¾x19¾—24 lbs. per box.

With the many different races of peaches under cultivation in the United States it is true that the regions in which peaches can be grown include practically the whole country, and nat-

Continued on page 27

The Apple as a Farm Product—History and Present Status

[Editor's Note.—The following article is the beginning of extracts from a thesis prepared by A. Millard, Jr., a young orchardist of Hood River, who graduated from Cornell in horticulture in 1915. Following chapters will appear in future editions of "Better Fruit" during the balance of the year. It contains much valuable information and data, with many original ideas in reference to the fruit industry, the apple in particular, as obtained by Mr. Millard through thorough research work covering a long period. This is one of the ablest and most thorough articles that has ever appeared in print along the lines covered and some good suggestions and sensible conclusions are drawn.]

APPLES are mentioned in some of man's earliest writings, and apples were planted by American Indians before the middle of the eighteenth century. (The writer has seen a specimen of these early plantings at Geneva, N. Y., which is said to be 125 to 150 years old.) We are, however, only concerned with the development of the commercial side of the apple industry in the United States, and correspondingly with the history of the whole fruit trade.

One hundred years ago practically no fruit was imported into this country; only an occasional cask of Mediterranean prunes, raisins, or grapes found its way across the four weeks of water as a very great luxury through the agency of the larger importing merchants of the colonies, and later of the young republic. Even the seasonal selling of the fruit of nearby farmers in cities was not practiced until early in the nineteenth century, and once at this point the trade stood still until about 1830. In 1832 a cargo of oranges arrived from Sicily, and this shipment was followed by a growing commerce in Italian oranges and lemons for thirty years, during which period these fruits held full possession of the American markets. About 1865 wholesale commission fruit houses came into existence, and Italian fruit began to come, consigned to these firms, but about 1880 branches of the Italian concerns were one by one established in New York and elsewhere, and these branch houses have since controlled the Mediterranean fruit trade here.

There was practically no competition by domestic fruit for the American trade till 1867. Oranges and lemons, grapes, raisins, currants, and prunes, fresh, preserved and dried, found only the Yankee apple as American-raised fruit. Even West Indies bananas and pineapples were not shipped in enough quantity to disturb the complete monopoly of the Mediterranean fruit. In 1867 the first car of green fruit from California reached New York, and from then our domestic sub-tropic fruits rapidly took over the United States markets. Lemons from Sicily still find a strong market on account of their flavor, and this, with the banana, rapidly growing in consumption, will always figure heavily in our fruit imports.

The phenomenal development of the banana trade is worthy of some note at this point. The schooner "Reynard" was the first West Indian "fruiter" when it brought, in 1804, to New York City the first thirty bunches delivered there. Small quantities were subsequently imported, till in 1830 a man named Pearsall landed 1500 bunches, the first considerable shipment. Banana imports grew quite slowly, till 1880, at which date they were listed for the first time separately in the importation reports. Since 1880 the growth of the banana trade has been enormous, and American growers feel the pressure of this competition in more ways than most of them realize. The banana is the "poor man's fruit." In 1912 the continental United States consumed 44,520,539 bunches, or over 60 bananas for each man, woman and child in the Union. These bananas came from the various small countries bordering the Carribean Sea; Jamaica leading with 15,467,918 bunches of the above mentioned imports. Of the entire banana crop of the world, the United States consumes nearly all (85%) and the remaining 15% is controlled and to a large degree re-exported by the United Fruit Company and a few other concerns. European taste for the banana is being developed, the area available for the production is literally unlimited, and the banana is a most important competitor of any fruit produced in the United States.

Strangely enough at first thought, but logically when we consider that we were then the colonies of an empire which expected to receive and not to give the luxuries of food, we find records of fruit export earlier than of import. This trade began with the apple. There is record of apple shipments to the West Indies in 1841, and the trade probably existed for some time previous to this date. Benjamin Franklin, in London, was sent a package of Newtown Pippins from the 1758 crop, and the sight and taste of these resulted in quite a trade. There is a letter on file (the younger Collinson, writing to John Bartram, "Better Fruit"), written in 1773, stating that the English apple crop had failed and that the market was being supplied by American apples. This letter reads, "They (American apples) are, notwithstanding, too expensive for common eating, being sold for twopence, threepence, and even fourpence an apple." The apple has always been the commercially ranking export fruit of this country. Shipments of ice from the New England ports to the West Indies, which began in 1805, were accompanied by large quantities of apples, and soon after the extension of the ice trade to India and China, which occurred in 1830, apples could be had in the ice ports of these countries. Statistics do not exist prior to 1821, when the Treasurer reported an export of 68,443 bushels of apples, valued at $39,966.

In the "Transactions of the American Institute" it is said that Boston fruit dealers had shipped apples and cranberries to Europe for many years. "In 1845 Newton Pippins from the orchard of Robert L. Pell, of Ulster Co., N. Y., which contained 20,000 trees, sold in London for $21.00 a barrel." Virginia apples were also exported about this time. The Eastern States still furnish a large part of the apples exported, but shipments from the great orchard districts of the Mississippi Valley and of the Pacific Coast now are a very large factor. New York City has always held the lead in apple exports of North America, in 1812-13 the approximate percentages of the barrels exported by the various cities were: New York, 32%; Boston, 16% (some few Canadian apples included); Portland, Me., 10%; Halifax and St. Johns, 30%. Boxed apples exported in this same year from the Atlantic seaboard were apportioned: New York, 93%; Boston, 6%, and Portland, Me., 1%. The various apple importing cities of Europe are elsewhere taken up under foreign markets.

Apples comprise by far the greatest amount of our fruit exportations, but various other fruits — cranberries, peaches, plums, prunes, pears, grapefruit, oranges, etc.—are also sent out. The supply of all but the first fruit comes in the main from California. In 1912 over two million pounds of apricots and peaches, over ninety-one million pounds of pears, and over six million pounds of plums and prunes were exported to England. Canada imports considerable quantities of our tender fruits, and most of the countries of Europe, excepting Russia and those bordering on the Mediterranean, import some of our fruit. Dried fruits are also exported in large quantities (the fruit-dryer was perfected between 1870 and 1875.) Belgium imported in 1912 $310,000 worth of our dried apples, apricots and prunes, and Austria imported about a million and a half pounds of various dried fruits. France imports much, but her orders depend entirely on her own crop. Germany imports a great deal; but Italy, Norway, The Netherlands and Russia import but little dried fruit. England imports in quantity only prunes and plums, of which in 1912 she took twenty-nine million and a hundred and fourteen million pounds respectively. Japan, China and India import very little dried fruit, although there may be a limited field for further exploitation there. Australia does take some of our dried apples, though this commonwealth exports the first fruit in quantity. There is a very bright promise for increase in the dried fruit trade with South America.

We have seen above that there was no domestic competition for the fruit trade in the United States until after the Civil War, except for the poorly developed apple industry and the even less developed small fruit trade from Long Island, New Jersey and Delaware. Exceptions to this condition were occasional boatloads of watermelons, etc., from the South. After this

time the growth of intra-state commerce in fruits was very strong and very rapid. According to U. B. Barnes, of Middlehope, N. Y., the planting of commercial apple orchards did not receive much attention until 1825, although Robert Pell was already exporting Newton Pippins. Gradually, summer, early and late fall apples became customarily shipped down the Hudson to New York. These apples were often sold by the steamboat captains who carried the fruit to the city. Heavy plantings in Western New York followed the completion of the Erie Canal, which opened in Western New York one of the greatest fruit regions of the world. The 1867 shipment of California to New York City was a failure as regards condition of fruit and prices received, but the idea remained, and pears, peaches, Tokey and other grapes, and later, oranges and lemons followed this firm shipment. This State is today easily first in green fruit production, though prior to 1893, but 5,000 boxes in all of California fruit had ever been sold in New York. Florida oranges entered the market shortly after this first California shipment, and now the more rapid citrus industry in California has outstripped the orange industry in Florida. Florida, however, has the grapefruit, and the two states are keen competitors in the production of domestic, tropical and sub-tropical fruits of all kinds. Early fruits with vegetables are controlled by the Gulf States, and specialized fruit industries have sprung up in the Rocky Mountain and North Pacific States.

The following tables show the 1909 values, acreage, etc., of small and orchard fruits in the United States:

TABLE IV.—SMALL FRUITS IN THE UNITED STATES, 1910 CENSUS.

	Total Value in 1909	*Production in 1909 (quarts)*	*Acreage*	*Relative Value*
All small fruits	$29,974,481	426,565,863	272,460	100.0%
Strawberries	17,613,926	255,702,035	143,045	58.8%
Blackberries	3,909,831	55,343,570	49,004	13.0%
Raspberries	5,132,277	60,918,196	48,668	17.6%
Currants	790,431	10,448,532	7,862	2.8%
Gooseberries	517,034	5,282,813	4,765	1.8%
Other small fruits	1,810,982	38,870,687	19,116	6.0%

TABLE V.—ORCHARD FRUITS IN THE UNITED STATES, 1910 CENSUS.

	Total Value	*Production (Bushels)*	*Increase over 1899*	*Relative Value*
All orchard crops	$140,867,347	216,083,695	1.8%	100.0%
Apples	83,233,492	147,522,318	15.9%	59.1%
Peaches	28,781,078	35,470,276	133.0%	20.4%
Pears	7,910,600	8,840,733	33.4%	5.6%
Plums and Prunes	10,299,495	15,480,170	76.6%	7.3%
Cherries	7,231,160	4,126,099	43.6%	5.1%
Apricots	2,884,119	4,150,263	57.1%	2.0%
Quinces	517,243	428,672	....	0.3%

The acreage of all classes of small fruits decreased between 1899 and 1909 from a total of 309,770 to 272,460 acres, or 12%; likewise the total production was 7.9% less. The only crop with increased production was cranberries. Small fruits in general are grown rather uniformly throughout the United States. In acreage New York and New Jersey head the list, but many states produce crops excelling the New Jersey crop in value. Strawberries come from all sections of the country, but the South Atlantic States are the heaviest producers, having in 1909 a crop worth $3,500,000, or about one-fifth of the total value of the strawberry crop of the entire country. The increase of value in small fruits is not given for the different crops separately, but as a whole the berries showed an increase in 19.8% in value, with a decrease of 7.9% in total production.

Our grape crop has had a picturesque history since the first vain attempts in colonial days. Ohio and Missouri have in turn lead the other states in production, but today 63% of our crop comes from California, New York and Michigan. Practically all of our European grapes are produced in California, whereas New York and Michigan can produce only native American grapes of the Concord type. The grape crop for 1909 was valued at $22,027,961, an increase of 57.1% over the value in 1899. The total production in 1909 was 2,571,065,205 pounds.

The following table gives the value of tropical and sub-tropical fruits in the United States for 1909:

The total value of tropical and sub-tropical fruits trebled in the ten years between the twelfth and thirteenth census figures. The production of citrus fruit alone increased 231.3%. Much of the greater part of the tropical and sub-tropical fruit produced in the United States is grown in California and Florida, the former producing 67.8% and Florida 28.7% of the total valuation. Of the oranges, nearly three-fourths are produced in California, most of the remainder coming from Florida. Nearly the entire domestic supply of lemons comes from California. Although California produces a few grape fruits, the dealers receive nearly the entire supply from Florida. No other class of fruit has increased in production and popularity in the past decade as has the grapefruit or pomelo. The other citrus fruits are unimportant; these are limes, tangerines, and kumquats, chiefly from Florida, and mandarines from Louisiana. The production of figs is widely distributed throughout the Southern States, although California leads with two-fifths of the crop. Arizona and California control the domestic supply of olives—a crop which has trebled in the last decade. Florida is the only source of supply within the United States for pineapples, bananas, Avocado pears, and mangoes. (Discussion, "Small Fruits, Grapes, and Tropical Fruits," largely verbatim copy from "Better Fruit.") The guavas are known only in California and Florida, and loquats only in the former. The native supply of pomegranates and dates come from several of the southern and southwestern states. Japanese persimmon is produced only in California, Florida and Texas.

TABLE VI.—VALUE AND PRODUCTION OF TROPICAL AND SUBTROPICAL FRUITS, 1909.

Non-Citrus Fruits	*Total Value in 1909*	*Production in 1909*	*Increase of Production over 1899*
Figs	$803,810	35,060,395 pounds	178.3%
Pineapples	734,090	778,651 crates	672.6%
Olives	404,574	16,405,493 pounds	220.6%
Bananas	5,661	10,060 bunches	Not given
Avocado Pears	10,100	4,920 crates	Not given
Guavas	11,628	354,062 pounds	—78.8%
Mangoes	5,739	5,278 pounds	Not given
Persimmons (Japanese)	9,087	6,723 bushels	148.1%
Loquats	5,880	4,541 boxes	Not given
Pomegranates	4,203	152,825 pounds	Not given
Dates	533	9,947 pounds	Not given
Citrus Fruits			
Oranges	$17,566,464	19,487,481 boxes	217.0%
Lemons	2,993,738	2,770,313 boxes	215.9%
Grape Fruit	2,060,610	1,189,250 boxes	3,378.7%
Limes	12,478	11,318 boxes	—50.0%
Tangerines	68,770	38,752 boxes	Not given
Mandarines	6,553	3,896 boxes	Not given
Kumquats	2,826	1,112 boxes	Not given

Danger of Clover-root Curculio.

The United States Department of Agriculture in the Weekly News Letter under date of April 21st, has called the attention of the fruit growers and famers to the danger of clover-root curculio. The pest has become more or less of a national menace as a destroyer of the various legumes. It works in the stems and frequently is unnoticed and for this reason the damage has been frequently attributed to other causes. Recently it has been shown to be a great obstacle to alfalfa growing. The Department states there is only one practical suggestion at the present that can be made for limiting the devastations of curculio, that is disking or harrowing the fields as soon as the first crop is harvested. This process, it is stated, will destroy vast

numbers of the pupae of this insect, which do not descend more than one inch below the surface. Disking and harrowing ought to be done immediately after removing the first hay crop as prompt action even at this time, will not prevent injury to the present crop but should serve to considerably reduce the pest the following year. If your alfalfa looked sick last year and you did not know what was the matter it is time to investigate. It may be this curculio, and, if so, prompt action should be taken, as Government advice is usually unquestionably good. It would seem the proper thing would be to disc it promptly. Some disc-harrows are especially suited for this purpose. The Cutaway Harrow Company of Higganum, Conn., have given considerable time investigating this pest, and fruit growers who have trouble may find it worth while to write this company for further information in reference to this pest.

Why the Apple Is "Food of the Gods"

The apple has become so familiar to us as the commonest of all fruits that its value as man's greatest friend in the vegetable kingdom may not be fully realized. It was called the "food of the gods" because it was believed to be the magic renewer of youth to which the gods resorted when they felt themselves growing old and feeble. There have been many mystic traditions about the apple, which has been credited with varied potency. It is the healing fruit of the Arabian tales. Latin chronicles and institutes and early English poems contain many references to it. Scientific analysis of late years has justified all the ancient glorification of this fruit, which has been found to contain albumen, sugar, gum, malic acid, gallic acid, fibre, water and phosphorous.

Malic acid of apples neutralizes the excess of chalky matter caused by too much meat and thereby helps to keep us young. Apples are good for the complexion, as their acids drive out the noxious matters which cause skin eruptions. They are food for the brain, which those same noxious matters, if retained, render sluggish. The acids of the apple diminish the acidity of the stomach that comes with some forms of indigestion. The phosphorus, of which apples contain a larger per cent than any other fruit or vegetable, renews the essential matter of the brain and spinal column. England, Normandy and the United States have made the most notable improvement in the quality of the fruit, of which there are between 400 and 500 distinct varieties.

Mr. Howard G. Fletcher Joins the Northwestern Fruit Exchange

Mr. Howard G. Fletcher has resigned his position as General Manager of the Grand Junction Fruit Growers' Exchange of Colorado and accepted a position with the Northwestern Fruit Exchange as Associate Salesmanager. The Grand Junction Fruit Growers' Association, of which Mr. Fletcher has been manager, is one of the largest and best co-operative organizations in the United States, having been in existance for 25 years, managed previously for many years by Mr. John Moore. Last year it handled a tonnage of 3000 cars. Mr. Fletcher accepted a position with the Grand Junction Association fourteen years ago and by hard work and close attention to business he received many promotions, finally being tendered the position of Manager three years ago, which he has filled with credit to himself and the Association. Mr. Fletcher is not only well known among the fruit growers throughout Colorado, but has an extensive acquaintance with the trade all over United States and is recognized as a man of ability and a splendid fruit sales operator. His acquaintance and knowledge of the business will be a great help to the Northwestern Fruit Exchange.

Half a Million Dollar Loans

The Seattle banks, after numerous conferences through their clearing houses, have about perfected arrangements for financing the growers of the Wenatchee North Central Washington Growers' League for the year 1915, and expect to perfect arrangements to advance the growers of the above district Half a Million Dollars with which to care for and harvest their apple crop during the coming season. This loan probably will be made through the marketing organizations, five of which have been approved by the Seattle banks, as follows: Wenatchee Fruit Growers' Association, North Pacific Fruit Distributors, Northwest Fruit Exchange, Wenatchee Produce Company, and G. M. H. Wagner & Sons of Chicago.

The apricot crop in Southern California will probably be from 30 to 40 per cent of last year's crop.

Three Years' Experience with Home Canning Plant

By C. C. Vineent, Horticulturist, University of Idaho, Moscow

SINCE the fruit industry in the Pacific Northwest has attained such gigantic proportions, many questions of great importance have confronted the best brains and talent for solution; questions of vital importance and far-reaching consequence, that demand careful and faithful consideration by those entrusted with the solution of such problems. Such problems as orchard management, orchard irrigation, maintenance of soil fertility, picking and packing, as well as marketing schemes should be encouraged and helped by both state and nation, but we believe there is another question of vital importance to all the people of the Pacific Northwest that should receive the early attention of investigators, and that is the saving of by-products that naturally go to waste annually on our farms. It was the concensus of opinion at a recent meeting of the National Apple Show By-products Committee that fully 25 per cent of our present investment of $200,000,000 in the fruit industry in the four Northwestern states went to waste. This tremendous loss affects practically every farmer, orchardist and planter in the country.

For your future prosperity and development can you, Mr. Fruit Grower and Vegetable Grower, afford to let this continue. Decidedly, No. As the sum total of our knowledge is the result and experience of the present as of past generations, we can readily see that the logical thing to do is to establish at an early date plants for the handling of by-products. The fruit growers' organizations, private enterprise, etc., should immediately take up the matter for the installation of vinegar factories, canning plants, and evaporating establishments. Referring again to a recent meeting of the By-Products Committee, we find in their minutes a statement to the effect that fully 10 per cent of the by-products plants here in the Northwest have been failures.

This state of affairs does probably exist here in the Pacific Northwest, but this cannot be the true condition generally throughout the United States, for, according to the last census report, there has been a gradual increase in the number of canning and preserving plants since 1869. In 1869 there were only 167 successful plants, employing 6,240 men, women and children. In 1909 we find 3,369 plants, furnishing employment to 50,042 people.

TABLE I.

	No. of Establishments	Wage-earners (Average Number)	Wages	Cost of Materials	Value of Products	Value Added by Manufacture
1909	3,369	50,042	$15,516,809	$84,341,019	$128,772,908	$44,431,889
1904	2,789	48,499	13,496,784	68,217,318	107.838,309	39,620,991
1899	2,237	44,414	10,489,908	51,257,620	79,904,548	28,646,928
1889	1,202	53,339	5,810,209	23,993,704	39,653,271	15,659,567
1879	520	32,835	2,939,414	13,523,932	20,006,918	6,482,986
1869	127	6,204	885,070	3,939,616	6,668,513	2,728,897

A close analysis of the situation reveals the fact that failure has been due primarily to the installation of too elaborate, expensive machinery, which ties up capital and cripples the industry. The essential requisite in the canning of fruits and vegetables is to grow the crop. The products should be grown in large enough quantities to justify the installation of expensive machinery for commercial canning. Mr. M. C. Remelin, manager of the Yakima Fruit Products Company, says that one of the essentials to success in the business is the stability of supply; without this the plant of the most modern design, operated under the most efficient management, will soon close its doors, for the requisite of success is dividends; dividends depend upon sales, and sales depend upon your ability to furnish a dependable quantity of quality goods.

The rapid growth of the canning industry in other parts of the country has been due largely to this stability of supply, efficient management, a thorough knowledge of the various details involved in processing, and the close and constant attention to details. Efficient management is absolutely essential in the operation of a successful canning factory. A community that can furnish a constant supply of fruits and vegetables over a long period, should have no difficulty in making a canning plant pay good dividends. The length of season for the various fruits and vegetables in and around Moscow, Idaho, is as follows: Asparagus, May 15 to July 1; string beans, July 15 to September 15; corn, August 10 to September 20; peas, June 10 to July 20; tomatoes, August 15 to October 1; rhubarb, June 1 to July 30; strawberries, June 10 to July 15; apricots, July 15 to August 1; blackberries, July 1 to August 20; raspberries, July 10 to August 15; apples, September 1 to December 15.

The annual output from these successful plants is enormous. To show to what extent by-products are utilized, we find that in 1909, 32,752,469 cases of vegetables, valued at $51,568,914, were sold. A total of 5,501,403 cases of fruits, representing a valuation of $12,938,474, were also placed on the market. The accompanying table, taken from the Thirteenth Census, shows in detail the various fruits and vegetables canned:

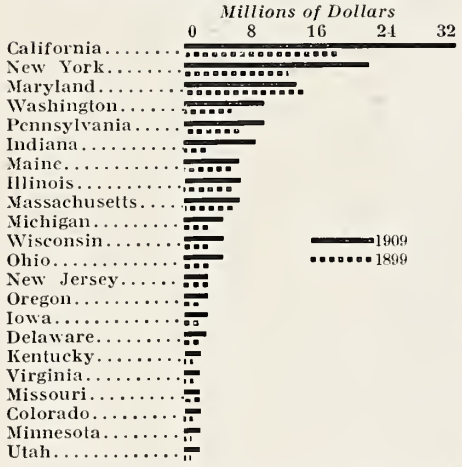
TABLE II.

Kind	Quantity Cases	Value
Canned Vegetables	32,752,469	$51,568,914
Tomatoes	12,909,986	18,747,941
Corn	7,451,265	10,332,136
Peas	5,901,703	10,247,363
Beans	3,392,864	6,013,098
Asparagus	228,559	1,975,775
Pumpkin	440,303	576,043
Sweet Potatoes	347,286	531,651
All other	2,080,503	3,144,907
Canned Fruits	5,501,404	12,938,474
Peaches	1,467,213	3,753,698
Apples	1,205,742	1,898,720
Apricots	630,185	1,825,311
Pears	637,782	1,833,214
Berries	815,851	1,754,927
Cherries	390,351	1,019,013
All other	354,280	853,591
	Pounds	
Dried Fruits	400,328,767	$19,840,395
Raisins	111,774,767	4,837,933
Prunes	138,498,490	5,130,412
Apples	44,568,244	3,098,095
Peaches	46,843,391	2,423,083
Apricots	29,205,569	2,277,177
All other	29,438,306	2,073,695

To show graphically the value of various caned products, such as fish, oysters, fruits, vegetables and the manufacture of pickles, preserves and jel-

lies for the leading states, for 1899 and 1909, I wish to call your attention to the following chart:

CHART I.
CANNING AND PRESERVING—VALUE OF PRODUCTS FOR LEADING STATES, 1909 AND 1899.



In presenting the above figures and charts I do so with a view of showing the true condition existing at the present time. If it is impossible to maintain and manage and at a profit operate a large commercial cannery, possessing all the most modern, improved machinery, etc., I believe the immediate solution of the problem is the establishment of small community canneries, or individual outfits. Such plants can be bought at prices that will come within the reach of all. I see no reason why these smaller plants cannot, under most conditions, conveniently take care of all perishable products that go to waste in certain localities. The Horticultural Department of the University of Idaho has been operating for the past three years, and successfully, too, one of these small plants. The fruit and vegetables are all processed under steam pressure. These small canning factories cost from $200 to $500.

The outfit that was installed at the University consists of two steam-tight retorts, 27 inches deep and 25 inches in diameter, each one holding 144 No. 2 cans, 90 No. 2½ cans, and 21 No. 10 cans. Two galvanized iron crates, in which the cans are placed, are also furnished. These have openings in the bottom and side for free access and circulation of steam. A steam boiler, complete, one blast furnace, two capping irons, tipping irons, iron complete for crane, etc., are included. The daily capacity of the plant depends almost entirely upon the speed of the employees, as well as the number employed. The claims of one manufacturer are that from five thousand to ten thousand cans per day can be processed, depending, of course, entirely upon the kind of goods packed. We employ one man to solder and tip the cans and to care for the boiler; another to load and unload the crates, to take away the cans and attend to the blanching and scalding; a woman to fill the cans and prepare them for the capper. Then enough girls to prepare the fruits and vegetables for the cans. The length of time it takes one person to prepare fruits and vegetables is as follows: Peas, 12 pounds per hour or 120 pounds per day; beans, 8 pounds per hour or 80 pounds per day; tomatoes, 37 pounds per hour or 370 pounds per day; peaches, 34 pounds per hour or 380 pounds per day; apricots, 22 pounds per hour or 220 pounds per day; pie cherries, two gallons per hour or 20 gallons per day; cherries, 45 pounds per hour or 450 pounds per day; raspberries, 10 minutes per crate, six crates per hour, or 60 crates per day; strawberries, one crate per hour or ten crates per day.

The following table shows approximately the capacity of our home cannery, that we have installed at the Idaho Experiment Station, prepared on the basis of one person filling cans. As it can readily be seen, the output of this plant could be doubled by increasing the labor, as the retorts are not kept busy the entire day. (For length of time required to process the different fruits and vegetables, see table.)

TABLE III.

	Peaches	Tomatoes	Peas
Number persons employed—			
Filling	1	1	1
Shelling or peeling	2	3	6
Soldering and processing	1	1	1
Number cans per hour	32	33	37
Number cans per day	320	330	370
Size of cans	2½	2½	2
Number pounds raw material—			
Per can	1¾	2¼	2
Used per day	560	742	740

The yield will vary according to the general care of crops, condition of soil, etc. Peas at the station have yielded at the rate of 6,188 pounds or 206 bushels per acre. A bushel of unshelled peas weighs 30 pounds. To keep the plant supplied with peas for one day would require the produce from one-eighth of an acre. At the rate of seven tons of tomatoes per acre, it will take the product of one-eighteenth of an acre to keep five people employed daily. To turn out 320 No. 2½ cans of peaches per day it will require 25 boxes. From the above data, you can readily see that it would take the products from a great many farms to keep a $500 plant supplied, let alone a $2,000 factory.

We have endeavored to ascertain as accurately as possible the actual cost of packing the various fruits and vegetables. Summarizing our figures for the past three years, the average cost per case shows to be as follows: Peas, $1.89 for No. 2 cans; beans, $1.57 for No. 2 cans; tomatoes, $1.73 for No. 2½ cans; corn, $1.91 for No. 2 cans; peaches, $1.86 for No. 2½ cans; apricots, $2.21 for No. 2½ cans; raspber-

ries, $1.64 for No. 2 cans; dewberries, $1.61 for No. 2 cans; loganberries, $1.66 for No. 2 cans; Royal Ann cherries, $2.12 for No. 10 cans. A case will hold 24 No. 2 cans, or 24 No. 2½ cans, or 12 No. 10 cans.

How profitable a factory of this kind will be will depend largely upon local conditions; for the condition of the crop, expense of labor, location as to market, all have a material influence on the profits obtained. To show the possible profit from an acre of different products we present the following:

TOMATOES.

Average yield per acre, 7 tons or 259 cases.	
Cost of canning per case	$0.6120
Cost of cans per case	.9216
Cost of case and labels	.1978
Total cost of canning	$1.7314
Wholesale price	$2.20
Total cost	1.73
Profit	$0.47
Net profit per acre	$121.73

BEANS.

Average yield per acre, 2,400 lbs. or 138 cases.	
Cost of canning per case	$0.6120
Cost of cans per case	.792
Case and label	.1478
Total cost	$1.5734
Wholesale price, per case	$2.40
Cost of canning	1.57
Profit	$0.83
Net profit per acre	$114.54

The cost of production can be reduced materially if cans, labels, etc., are bought in carload lots. Plain sanitary No. 2 fruit cans will cost approximately $29.75 per thousand, f. o. b. Portland. The enamel No. 2 cans cost $33.25 per thousand; No. 2½ plain, $34 per thousand; No. 2½ enamel cans, $38 per thousand, and the No. 10 enamel cans cost $78 per thousand. These prices include solder-hemmed caps, which cost $2 per thousand. In the cost of production we paid the above prices for our cans plus the freight; 15 cents and 20 cents per hour for labor; approximatcly $2.25 per thousand for labels, and 8 cents, 12 cents and 18 cents apiece for cases, f. o. b. Spokane.

The Cutler Fruit Grader Company

On June 29 the extensive factory of the Cutler Fruit Grader Company, including machinery and equipment, was burned to the ground. The building and machinery was owned by Cutler Bros., two enterprising orchardists of Hood River. Three years ago they worked out a patent for a fruit grading machine and continued to use it each year themselves in their own orchard, which is one of the best orchards in Hood River Valley, and by practical experience improved it from year to year. Originally Cutler Bros. put out a machine that graded by measurement. They became convinced that a more perfect grading machine could be produced if the sizing was done by weight, and after working a year on this difficult problem they reconstructed their machine, carrying out all the original good features, which had proven good by practical experience, producing a machine that graded by weight instead of by measurement. The experimental machine gave such perfect satisfaction in actual practice that they became convinced that it was absolutely the most perfect process of any they had tried, consequently they were busy manufacturing machines for this year. They inform us that they will immediately make arrangements for building these machines and will be able to furnish all growers who want them, although there will be some delay, and instead of being able to make deliveries in July they will not be able to make them until some time in August.

The machine which was designed for demonstration at the Panama-Pacific Exposition was burned, and for this reason Cutler Bros. have been compelled to cancel their arrangements and therefore will not exhibit their grading machine at the Panama-Pacific Exposition.

The Commercial Bank and Trust Company of Wenatchee, Wash., has issued a very interesting booklet with a very attractive cover, entitled, "What your neighbor is doing," which contains a number of interesting and instructive short articles of the fruit growers in the Wenatchee district, giving a brief account of what each one is doing, with a view to showing principally the value of diversity in connection with the fruit growing industry. There are many good and practical illustrations showing how fruit growers through diversity have produced an extra and steady income in addition to their fruit crops.

BETTER FRUIT

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ADVERTISING RATES ON APPLICATION

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The Apple Crop of 1915.—Last year, it is generally assumed, the apple crop of the United States amounted to fifty million barrels. The Agricultural Optimist estimated the crop at forty million barrels. In all probability the former estimate of fifty million barrels is more nearly correct. Apparently, from general reports all over the United States early in June, the apple crop this year is the shortest the editor remembers in the last thirteen years, during the time he has been an apple grower. The censensus of opinion seems to estimate the crop of the United States at about fifty per cent of last year, or in all probability less than fifty per cent of last year, which would mean twenty to twenty-five million barrels. However, there is much in store in the way of the June drop, which has not been reported on fully at the time of going to press with this edition. Drouth and disease are apt to be factors in reducing the crop during the balance of the year, so it seems safe to assume at the present time that the apple crop of the United States will probably not exceed fifty per cent of last year and maybe less. Every year during the last thirteen years in which the editor has been engaged in apple growing in Hood River, when the crop did not exceed thirty-five million barrels the apple grower got good prices, so the prospect this year looks very good indeed for good money for the grower, as well as for the dealer.

Cover Crops.—The orchard industry of the Northwest has been given somewhat to extremes, probably due to the fact that a large percentage of orchardists were comparatively new in the business and followed the example of a few leaders. Frequently some leaders are hobbyists, therefore the Northwest has occasionally gone to extremes in the past. This has been noticeably true in reference to clean cultivation. Too much clean cultivation has exhausted the humus of the soil and depleted the nitrogen content, and therefore many orchards are bearing less than they should and the general condition of the orchard is somewhat off. This is indicated both by light crops and light colored foliage, the leaves frequently turning yellow too early in the fall. The orchardists are now turning to cover crops. July and August are good months for sowing. If your orchard is not bearing right or does not have the right colored foliage investigate cover cropping. The cover crops most frequently used are clover, alfalfa and vetch.

A good many orchardists who have planted cover crops in the orchard do not understand that they require considerably more water, consequently many orchards are suffering instead of being benefitted by cover crops, because the fruit grower does not irrigate sufficiently. Cover crops take the moisture from the soil very rapidly, leaving not enough for orchard requirements, therefore fruit growers who have cover crops in the orchard should give the matter especial attention and see that the moisture condition is maintained evenly throughout the orchard and that the soil is kept in a nice moist condition during the balance of the growing season.

Home Canning.—The fruit grower, more than anyone else, should put up enough canned fruit to last until the next year. They can do this because the only cost involved is the cost of production. Every fruit grower should have a home canning outfit. These can be obtained at a very reasonable price. The advantages of home canning outfits are many. The work is done scientifically, without any danger of spoiling. It is done more rapidly. A home canning outfit can be operated by gasoline, which costs a great deal less than the amount of wood that is required where canning is done on the cook stove, besides when the weather is hot during the summer a home canning outfit is much more comfortable, as it can be operated outdoors, instead of heating up the kitchen. In addition to this, a home canning outfit operates much more rapidly and saves time.

Scab.—Scab is more or less prevalent in humid apple districts this season, with a considerable quantity in semi-arid districts. The experiment stations have devoted considerable time to this subject in various sections throughout the Northwest. An excellent schedule for prevention of scab has been prepared by the Agricultural College at Pullman, Washington, which gives excellent advice. The experiment station at Corvallis, Oregon, has had to contend with scab more than any other experiment station of the Northwest. Their recommendations have been excellent, but the main trouble seems to be that the fruit growers do not follow instructions. Excessive scab this year in nearly every instance is due to one of the following causes: Not spraying with the right fungicides; not spraying at the right time; not spraying thoroughly or not spraying frequently enough. In nearly every case where there is an excessive amount of scab, where careful investigation and inquiry has been made it has been ascertained that the grower has been remiss in some one of the requirements referred to in this brief editorial.

Tree Propping.—Orchardists are generally becoming more progressive every year, the business now being done in a very scientific and efficient manner. It is the aim of "Better Fruit" editorially to call attention to many features in connection with the orchard business that will be helpful to the grower.

There is nothing more short-sighted than for orchardists to allow the limbs with heavy loads to be weighted down to the ground. The loss is severe, as many limbs break off if not carefully propped. In addition to this, when limbs are severely bent with heavy loads they never fully go back, nor can they be pulled back to a natural, normal, upright position. Consequently it seems wise that the fruit grower should be urged to begin propping early and we would advise them to do the job very thoroughly, too.

A good many growers use forked sticks which they get out of the woods, but these are not very satisfactory and are difficult to obtain in many districts, where there are no forests from which to secure them. Consequently tree props have been invented which are very efficient and which are so constructed that the limbs are not bruised when they are propped.

"Better Fruit" aims to secure advertising from all firms who have any modern conveniences for the orchardist, in order that he may be informed of the latest and best articles on the market.

Apple Graders.—The editor of "Better Fruit" bought the first apple grader which was ever sold in the Northwest, in the year 1911. Since then several different makes of grading machines have been invented and are being put on the market, all of them giving very good satisfaction. Growers have found by actual experience and also by observation that by using grading machines in packing houses a saving of from five to ten cents per box can be made in the harvesting expenses. Therefore we suggest to all growers the advisability of investigating the different fruit sizers which are being placed on the market this year and purchasing what they want in time to make a saving on this year's crop.

This year the growers want to make as much money as possible and at the same time to save as much money as possible.

The Apple Crop of the Northwest for 1915.—The largest apple producing districts of the Northwest are: Yakima, Wenatchee, Hood River and Southern Idaho. Last year Hood River had over 1,300 cars, Yakima about 6,000 cars, Wenatchee about 5,500 cars, Southern Idaho probably around 500 cars. Conservative reports at the present time from these districts indicate that Yakima will have about one-third of last year's crop, or about 2,000 cars; Wenatchee is figuring on about 75 to 80 per cent, which would be about 4,000 cars. This probably puts Wenatchee's estimate a little high, as the crop certainly is not heavy. Southern Idaho seems to be comparatively strong compared with last year; various estimates place the probable output at from 500 to 600 cars. Rogue River had about 200 cars last year and may be to 300 cars this year. Montana will have probably 50 cars this year, more or less. Estimates seem to vary greatly from Colorado, all the way from 3,000 to 500 cars, which is very indefinite. Watsonville, California, will probably have 75 per cent of last year, or about 3,000 cars. Altogether the Northwest would size up somewhere from 40 to 50 per cent of last year's crop, maybe less. However, the growing season has been good and apples have attained splendid size up to July 1.

Attention has been called elsewhere in this edition to cover crops, showing the necessity of cover cropping. Attention is also called to the fact that cover crops can do serious injury, therefore it is wise in connection with that editorial to call the reader's attention to an article on "Cover Crops," which contains very interesting information.

The Editor takes pleasure in calling the attention of the reader to the beginning of a series of articles by A. Millard, Jr., the first of which appears in the July edition of "Better Fruit," continuing in successive numbers during the balance of the year, for the reason that these articles will contain much valuable information for fruit growers, and especially those engaged in the apple business.

Canning.—The July edition is off the press just in advance of the canning season, therefore with wise forethought this edition contains an excellent article by Professor C. C. Vincent of the Idaho Experiment Station, Moscow, Idaho, on "Canning." Professor Vincent has made a very thorough study, doing much practical work in home canning, consequently this article will prove interesting, instructive and very valuable to all people who intend to do home canning.

Summer Pruning.—July and August are the months when summer pruning is usually done. The editor desires to comment that while summer pruning is considered advantageous in increasing the crop it should be done with extreme caution, as frequently orchards suffer from summer pruning done unintelligently. Orchards can be damaged more than benefitted by injudicious summer pruning.

Marketing.—This edition contains a very excellent article of good common sense and good advice by Mr. J. F. Segrue, one of the most popular fruit growers of the Northwest, known generally all over this country as well as elsewhere as "Barney." Mr. Segrue is manager of one of the Cashmere Fruit Associations. He is a large orchardist and, it is a pleasure to say, a very successful one.

Economy This Year

Many fruit growers will undoubtedly find their young orchards are this season producing a pretty nice crop of apples. Many of them are short of money on account of last year's low prices, and therefore it is important for them to economize in every way possible. Every fruit grower needs a packing house of some kind. Perhaps he has a barn or shed which will be sufficient or which may be made sufficient with a little additional room. He finds that he is not in a position to build a packing house, which would

cost anywhere from $1,000 to $5,000; the size of his crop will not justify such an expense. The editor has given this matter considerable attention and last year found a grower who had solved the problem of furnishing additional room at a very small cost by having a large tent made. The editor called on the manager of the Portland Tent and Awning Company, Portland, Oregon, and ascertained that a grower can get a tent 30 feet by 40 feet, with walls about 7 feet high, which will furnish a splendid quantity of room, at a price somewhere between $60 and $80, according to the thickness of the canvas. The tent manufacturer will make a tent to order in any size desired and from any ply canvas.—Adv.

Palace Hotel, San Francisco, California

Since the Palace Hotel, San Francisco's historic hostelry, inaugurated its sweeping advertising and publicity campaign to acquaint the public with its reduced rates and at the same time to correct unjust and misleading statements regarding the hotel rates of this city during the Exposition year, ranchers, vineyardists, orchardists and dairymen are finding the Palace a popular and convenient gathering place. The reason for this is that when the Palace established its new rates and installed new features in connection with its service, the management had in mind meeting the particular needs of this class of patronage. In making its reduction in rates the Palace Hotel has won the endorsement and praise of the board of directors of the Panama-Pacific International Exposition, the leading hotels of the country, and also favorable editorial comment from many of the leading newspapers of the country. As a result of this generally favorable attitude and the fact that San Francisco is the scene of the great World's Fair, it is the consensus of opinion that, despite many unfortunate conditions this year, the attendance at the Exposition will be considerably increased and that the Palace will be generously patronized by all classes.—Adv.

Duplex Box Strapping

We would refer our readers to page 22, where they will see illustrations and interesting matter regarding a box strapping that is being introduced for use on apple boxes. This is the kind of strapping which is being used exclusively by the citrus fruit packers of California. Its use strengthens the package, prevents pilfering, and insures the arrival at destination in good condition. The expense of using this Duplex strapping is so small that it is hoped that by calling it to the attention of the apple packers and shippers its use may become general in apple packing houses, as it has in the orange and lemon shipping districts of California and Florida. Mr. A. C. Rulofson—so long identified with the cement-coated nail industry and one of the best known men among the fruit packers—is the Pacific Coast agent for this specialty, and he will gladly furnish samples and information to all interested.—Adv.

BORDEAUX MIXTURE

FOR THE CONTROL OF SCAB AND ANTHRACNOSE ON APPLE TREES.

To those fruit growers who intend using bordeaux mixture this summer and fall we wish to call attention to the following:

In the use of bordeaux mixture during the growing period it is important to use the best, properly balaneed preparation obtainable. "Orehard Brand" bordeaux mixture paste is so prepared (the result of careful chemical analysis, special knowledge and the right equipment) as to give the greatest possible efficieney. There is no waste of material, no clogging of nozzles and no loss of time in dissolving bluestone and slacking lime. No cumbersome mixing tanks are necessary; simply stir the paste to a uniform consistency in the original container, weigh out amount needed and dilute in proper amount of water.

"Orehard Brand" bordeaux paste is a time saver, is economical and is effective because it is properly made. It has as great advantage over the home-made bordeaux mixture as the commercial lime-sulphur solution has over the old home-made product. S. W. Foster, entomologist, General Chemical Company, 201 Sansome Street, San Francisco, California.—Adv.

Cover Crops for Bearing Irrigated Orchards

By Lee M. Lampson, Pullman, Washington

THE following discussion is based upon a farm-to-farm study of the use of green manures and cover crops in the Yakima and Columbia River valleys, particularly in Benton County. Most of our irrigated soils are naturally deficient in nitrogen and organic matter. The practice of clean orchard cultivation has also greatly aggravated this condition by causing the vegetable matter of the soil to decay and disappear. Hence the importance of orchard soil improvement by means of green manure and cover crops.

Many orchardists early appreciated the importance of maintaining soil fertility, and during the last ten or twelve years the various cover crops have been extensively tested; consequently, very satisfactory methods of growing and using these crops have been worked out. This paper is the result of a study of these farm methods. The primary purpose of this paper is: (1) to present the soil-building value of green manures and cover crops; (2) to discuss the growing and management of the crops found best adapted to this purpose, and (3) to show how cover crops may be profitably used for hay and pasturing swine.

As previously pointed out, most of our irrigated soils are deficient in nitrogen and organic matter. Under these circumstances the following conditions usually prevail: The water-holding capacity of the soil is too low; desirable bacterial life is insufficient; the soil dries out quickly; available plant food is inadequate for good crop yields; the soil is improperly aerated. In addition to the above, the fine-grained soils run together and bake and are difficult to cultivate. Green manure and cover crops correct these conditions. The roots of these crops permeate the soil to a considerable depth. The addition of vegetable matter makes most soils more friable, increases their water-holding capacity, improves soil aeration, increases bacterial activities—in short, builds up soil fertility.

The cover crops in use at the present time in Benton County may be divided into two classes, the cereals or small grains, and the legumes. The cereals—wheat, oats, barley, rye, etc.—are not the best crop to use as green manure or cover crops. Orchard soils usually need both humus and nitrogen. These crops cannot make use of the atmospheric nitrogen, and when plowed under or worked into the surface soil add only vegetable matter but little or no nitrogen. Generally speaking, they do not do well on gravelly and sandy soils. They also require the expense and work of reseeding each year. While it is sometimes necessary to sow rye in order to keep sandy soil from drifting, the use of this crop in this way should only be considered as a preparation for one of the permanent leguminous crops.

Leguminous crops, when grown under favorable conditions, have the nitrogen-gathering nodules on their roots. They are capable of increasing the nitrogen content of the soil by using the nitrogen in the atmosphere. This is a very important point, since arid sage-brush land is low in nitrogen. In addition to this, when plowed under the legumes increase the vegetable matter in the soil just the same as do the cereal crops. The legumes generally used for green manures are red clover, hairy or winter vetch, and alfalfa.

Used as a cover crop, clover adds both humus and nitrogen to the soil and is easily eradicated. It is not as good a crop for our localities as vetch or alfalfa. Clover requires considerably more water than alfalfa and a great deal more than vetch. Its root system is near the surface, and in order to keep the clover growing the upper layer of soil must be kept too wet for the trees. Orchards may be injured, not only temporarily but permanently, by such over-irrigation. Clover is also easily crowded out by grasses and other weeds. If it is sowed solidly in peach orchards and left more than two years, in nearly every case the foliage of the trees becomes yellowish and the

trees assume a sickly appearance; furthermore, if clover is worked into the soil by plowing or disking, considerable expense and work will have to be incurred each year in reseeding.

If the cover crop is to be grown purely as a soil-builder, vetch is unquestionably the best thing that has been tried in Benton County. If the crop is to be continued year after year, it is allowed to stand until a portion of the seed has matured before being disked or plowed under. In this way the crop reseeds itself each year. Where the crop is heavy it is often necessary to cut it up with a sharp disk before plowing it under. If the water supply is limited, the crop is not worked into the soil until the end of the season. During the fore part of the growing season vetch requires considerable water. Early in the summer the vetch ripens, goes down and forms a thick mat that completely covers and shades the surface of the ground. This materially lessens evaporation and decreases the amount of water necessary for irrigation. We have conservative farmers who claim that no more water is required to produce vetch in this way than to clean cultivate the land. While it takes more water in the spring when growing, it requires much less water during the hot part of the summer, because the crop is ripe and forms a dead mat on the surface of the ground. Vetch is sown during the latter part of summer or early fall. If a reasonably thick stand is desired the first year, 25 to 30 pounds of seed should be sown per acre, and this inoculated. Our experience does not warrant the sowing of spring vetch. To get rid of vetch plow it under in the spring, before the seeds form.

If it is desired to raise some hay or utilize the crop for pasture and at the same time build up the soil, alfalfa is better than vetch, because it will add humus and nitrogen to the soil and will produce more and better feed. The alfalfa that is grown in an orchard should not be used for hay unless it is to be fed to livestock and the manure returned to the soil. One of the best ways to handle alfalfa as a green manure and a hay crop at the same time is to cut the first two crops for feed and cut and disk the next two crops into the ground. This will add nitrogen and humus to the soil rapidly and at the same time furnish a good supply of hay. This will save considerable expense where hay has to be bought the year around. Alfalfa takes considerably more water than vetch. It is also harder to plow up, should it be desired to get rid of it. This last is not a serious objection, however, if it is done in the right way. The essential point in getting rid of alfalfa without difficulty is to plow very shallow just before freezing weather, having the plow absolutely sharp. This will cut the crowns off and leave them near the surface, so that they will freeze during the winter.

Alfalfa can be sown solid in orchards without injurious results after the trees are four or five years old, providing they have made a good growth up to that time. Otherwise clean cultivation should be practiced a few feet on each side of the trees until they are thrifty and vigorous.

I would not feel that a discussion of cover crops was complete unless I at least briefly presented the most profitable method we have found of using them. The practice of pasturing down the cover crops with hogs has been very profitable where it was done properly. There are some who want to carry on only one farm enterprise and seriously object to such a thing as a hog on the farm, but the most of us are farming primarily to make money and we cannot afford to let our likes and dislikes influence our decision in operating the farm. The two questions that arise here are: Will the hogs hurt the orchard? and, will they pay?

Only occasionally hogs will injure matured trees. When I hear a man say that hogs won't hurt trees I know he is drawing his conclusions only from his own experience or very limited observation, and that he is mistaken. When I hear a man say you can't run hogs in an orchard because they will injure the trees, I also know he is drawing his conclusion from very exceptional cases. If time would permit, I could give you the results of a farm-to-farm study on this problem in the Yakima and Columbia River valleys. The results, if tabulated, would show in about the following proportions: I

find ten farms where the hogs have hurt the trees more or less. On eight of these farms one of two conditions exist—either a large number of hogs are confined around a few trees, or the hogs have become poor because their ration has been nothing but roughage (alfalfa, clover, waste fruit, roots and the like). I find on the other two of these ten farms the hogs have done a slight amount of harm even where they have been well cared for. On the other side of the question, I find ninety farms where the hogs have not harmed the trees in two to seven years' experience. This makes two out of one hundred farms on which the hogs have been properly fed and cared for where they have injured the trees while pasturing down the cover crops. Now, it doesn't do any good to say "properly fed" unless brief mention is made of how the feeding is done in the successful places, because indefinite information is worthless.

Feeding hogs would be a long discussion in itself. So, to be as brief and concise as possible, the failure in raising profitable hogs and preventing injury to trees while pasturing cover crops are practically all due to getting the hogs poor and stunted by feeding them nothing but roughage. Enough concentrated feed to keep the hogs thrifty is absolutely essential. For pigs and shoats this will be about a two per cent grain ration—that is, two pounds of grain for one hundred pounds of live weight of hogs. Now, I hope no one will contradict this statement of facts because he has seen someone keeping brood sows or other mature hogs fat on pasture alone. Mature hogs, if placed on pasture while in good condition, can be carried in that condition on roughage, but pigs and shoats positively will not keep fat enough to grow good without a small amount of concentrated feed.

Will the hogs in the orchard pay? I will cite only two or three of a number of illustrations that might be given. The following experiments were carried on with grade Durocs. A farmer who is a good feeder was induced to weigh his hogs in and out and keep accurate accounts of all feed except roughage (that is, the pasture and waste fruit). To make a long story short, he grew the hogs for 3.6 cents a pound, not including the roughage. The hogs sold at 7½ cents per pound. This left him 3.9 cents per pound to cover the cover crop pasture and the waste fruit and his work in looking after them. These hogs were fed enough grain to keep them reasonably fat from the time they were weaned until they were marketed, which time was four and one-half months. Another man kept figures and he lost $105.60 on thirty head. Don't let this next point slip by you. His pigs were run on alfalfa alone after they were weaned until they got poor. At the same time another farmer was keeping figures for us. He bought the grain at the same place and he got $82 for the pasture and waste fruit put into 18 hogs in four and one-half months.

These few typical illustrations will show that hogs in the orchard are profitable if properly fed.

The above recommendations on planting cover crops, the kind of cover crops and the use of them, are made only after going over more than seven hundred farms in the Yakima and Columbia River valleys and studying in detail every plan of cover cropping and clean cultivation in orchards of different kinds and ages and discussing the subject from every angle with the owners. After this study a cover crop of some kind is strongly recommended, both to improve the soil, save water and the expense of clean cultivation, and the pasturing of the cover crops is recommended because it has been found to pay.

Method and Value of Thinning Fruit

"It is becoming more and more apparent that under our present market conditions Oregon growers must produce the very highest percentage possible of first-class fruit if they are to make good money from their orchards," says Professor W. S. Brown, extension horticulturist of the Oregon Agricultural College. "Thinning fruit, especially apples, pears and peaches, is a practice which has been tried for some time in most of the specialized fruit districts of the Northwest and has proved to be of great value in growing fruit of the best merchantable quality. Fruit growing districts of the East are beginning the practice also.

"Thinning may be done either by pinching or twisting off the stem with the thumb and fingers or by using small shears or pruners. In either case great care must be taken not to loosen the stem of the remaining fruit or to break the fruit spur. An orchard foreman must watch the ground carefully to notice when workmen are careless in this respect.

"The specimens should be left widely separated enough so that when mature they will not touch. Whenever they come in contact with each other fruits are apt to rub, or may offer a convenient place for codling moth larvae to start their burrows, or in the case of highly colored varieties, cause the fruit to be off-color at that spot. To avoid touching, young apples, pears and peaches are thinned to four to seven inches apart, depending upon the variety.

"On apples and pears thinning is done for the most part just after the June drop. Peaches grow so rapidly and set so abundantly, as a rule, that they are often thinned before the 'drop' is over. Many growers, however, make a secondary thinning of apples and pears in the latter part of summer, when cultivation is over and the work is slack, in which they take off specimens that have bad scab spots, worm infestations, rubs, sunburn and the like.

"Thinning is a form of harvesting, in a sense, and what it may cost may be rightfully charged to harvesting. It has the advantage, however, of coming during the long days of summer, when the work is not so rushing as at harvest; of saving the vitality of the tree, which would be expended in maturing the crop; of avoiding breakage in the limbs, due to overloading in years of heavy crops, and of greatly reducing the number of culls which would otherwise be handled at harvest time.

"In considering the amount of thinning to be done the fruiting habits of each variety must be carefully consid-

ered, for an understanding of them is of the utmost importance. Varieties like the Newtown and Spitzenberg, that bear many of their fruits in clusters, may be benefited by thinning even when the yield is moderate, because, as has been pointed out, the percentage of culls may be increased quite materially by allowing individual fruits to touch each other. Varieties such as Winesaps, which naturally are inclined to bear small speciments if allowed to bear a full load, may have the size of their fruits increased materially by judicious thinning. On the other hand, some varieties, such as the King apple and the Clairgeau pear, are apt to grow to a size too large to be best for marketing if thinned considerably. Care must be taken not to thin too heavily or too early on some varieties that shed heavily, such as Arkansas Black. Many varieties that bring low prices on the markets, such as the Ben Davis, it may not pay to thin when prospects are good for large yields of the better sorts.

"The cost of thinning will vary greatly with the size and shape of the tree—whether low or high-headed—and the load of fruit it carries. Ordinarily it will take a man from one and one-half to four hours to complete the job on mature trees.

"The best way for every fruit grower to find out whether thinning pays for him or not, is to try it carefully on a few trees, leaving others unthinned to check on. He should keep track of the amount of time required in thinning and in harvesting, and should note the differences in the proportionate amount of culls obtained from the thinned and unthinned trees. After the fruit is sold he can then figure out which method gave him the largest net profit."

Summer Prunning

The importance of summer-pruning young apple trees is little understood by many fruit growers. The habit has become so firmly fixed that all pruning is invariably done during the late winter or early spring months.

While winter pruning will always be most important, because less injury is done to the trees at this season, especially to old bearing trees, yet, for the best success with young trees, summer pruning should be as regularly performed as winter pruning. After the shape of the tree has been obtained through winter pruning, the filling out of the branches and the trunk should be accomplished by summer pruning. This is especially true during the fourth and fifth years after planting. As a rule, most fruit growers prune their young trees too heavily during these years. Growth becomes too excessive, especially in length, and the branches do not become properly braced at the crotches of the tree. If summer pruning is done between the middle and the latter part of June, when the growth in length has reached from twelve to fifteen inches, by cutting off the terminal buds, it will invariably check the growth in length and increase the thickness of the trunk and branches.

Further, it tends to produce fruit spurs by checking the flow of the sap.

Summer pruning may also be practiced on older or bearing trees in connection with the thinning of the fruit. In this case, there is very little occasion for cutting and pinching off the terminal shoots, as older trees make little or no wood growth, and cutting out a number of fruit spurs will give a larger amount of food supply for the remaining ones and the size of the fruit borne is greatly increased.

In Colorado, especially, we are troubled with over-bearing, that is, most of our trees have too many fruit spurs and set too many fruits, making it difficult to obtain the proper size. While thinning the apples by removing them after the fruit is set is a remedy against over-bearing, yet this is less efficient than the actual removal of a certain number of fruit spurs. In cutting out the fruit spurs they should be cut off close to the branches and in such manner as to leave the remaining spurs well distributed on the branches.

The time for this kind of thinning, or summer pruning, is after the apples are well formed and the June drop is past. The operator can then gauge the number to be removed or left without any difficulty.

A pair of light pruning shears is the best tool for this purpose.—E. P. Sandsten, Colorado Agricultural College, Fort Collins, Colorado.

"Lushus Brand"

The North Pacific Fruit Distributors offered a number of prizes for the best name for a brand, the principal requirement being that the name should appeal to the taste or appetite, this being important for the reason that this was the primary function in the name of any food product. Two thousand five hundred names for brands were submitted. Carl W. Art of Spokane won the first prize, the name "Lushus" being chosen which has been adopted. Mrs. C. A. Sanborn won the second prize with the suggestion "Mello-west." Carl G. Allenbach of Spokane won the third prize with the suggestion "Dependapack." The committee who awarded the prize was composed of Dr. H. S. Clemmer, President of the Spokane Ad Club; G. C. Corbalay, Manager of the Chamber of Commerce, and J. H. Robbins, General Manager of the North Pacific Fruit Distributors.

It was stated early in April that a new warehouse would be erected in Wenatchee this season by G. M. H. Wagner & Sons of Chicago, Fruit & Produce Dealers of that city and large operators in Western box apples. The plans for the warehouse call for hollow-tile construction, fire proof, which will be 50x90 feet, one story with basement. The site selected is at the foot of Orondo Street on a lot owned by Mr. J. Lewis. This warehouse will approximately hold about 50 cars.

Marketing the Apple

By J. F. Segrue, Cashmere, Washington

TO attempt to shed any new light on the much discussed topic of marketing our apple crop, is a difficult task. There is, however, an opportunity to point out to those most interested in the solution of this question, the fact, that practical application of some of the plans now in use would be more beneficial to the grower than the constant effort to find new schemes to dabble with.

The marketing of our product under whatever name or form it may ultimately be done, is going to be a complex and many-sided affair, and it is unfortunate that the individual most interested, viz., the grower, is lamentably ignorant of the many difficulties and perplexities that must always be met and overcome in effecting a satisfactory distribution of his crop. The main object to be attained is the getting for the grower the maximum figure that the business can stand. By this I do not mean that the price should be shoved up to an extortionate figure, because then the consumption would be reduced and the business brought to a standstill. Nor do I mean that the fruit should be sold at such a low price as to return no profit to the grower, for in that case the production would cease and the business be brought to a standstill. There is, however, an average price at which consumption can be kept in a healthy condition and at which the careful grower can succeed. The system or systems that for a period of years can bring this condition about is what we are looking for. One of the chief obstacles to this result is the grower himself. The plans to be successful must be elastic. There is no one way in which fruit can be sold year in and year out. There is no one line of effort that can successfully cope with the varying conditions of even any one year.

There are, however, certain broad lines along which the general scheme can and must move to have any hope of success. Supply and demand is the dominating factor. When the supply is great, the demand, while it may not decrease, is necessarily less active and must be sought more diligently. This invariably means a lower price and more expensive selling. In years of short crops the opposite is true. Apples not being a vital necessity, despite assertions to the contrary, are not as badly needed in years of financial stress as wheat, meat, eggs, and the other necessities of life. Therefore, it is only right to expect in seasons such as this that the returns will not be as glittering as in years of short crops and prosperity, and any plan or plans must naturally be subject to these conditions. The grower in too many instances forgets to take these conditions into consideration, and casts aside or loses faith in the plans already matured, whereas, as a matter of fact, the plan is all right. The grower also has a happy faculty of forgetting that the most perfect plan is doomed beforehand if concerted action on the part of the executive or selling force and the producer is neglected. The sharpest axe in the world will not cut down a tree unless used as it should be. The finest bricks and mortar will not erect a building unless competent labor is employed. Therefore, until the rank and file of the fruit growers study the salient points of any marketing scheme, and after studying it, apply the knowledge gained thereby in putting the theory into actual practice, little or no result can be expected.

Plans of any kind are not perfected in a day or year. Any selling plan can only be perfected—if indeed that is possible—by years of patient plodding. Stick-to-it-iveness is the great attribute that our business is so sorely in need of. It is generally conceded that a central organization of some kind is the most likely solution of this question. Be it one or two organizations of this nature that is finally decided upon, there is this feature in common to both, to-wit: There must be a central or executive body from which radiates the following spokes: On one side, the canvassers of the trade, call them agents, brokers, what you please, whose duty

it is to find a market for the fruit; on the other side are the local units, composed of the growers who produce the commodity which the agents are attempting to sell. The central body is the halfway house. Being directly in touch with neither the buyer nor the grower, having to trust to the agents on one hand for information as to demand, price, etc., to the grower on the other hand for information as to supply, conditions of fruit, etc., it must be, necessarily, a keeper of records.

When the agent inquires as to the amount and quality of the fruit to be sold, the central body has no actual knowledge of its own. It can only answer truthfully and intelligently as its records are truthful and intelligent. Here is where the grower falls down. He too often fails to realize that telepathy is a negligable quantity as yet, and that unless he personally supplies his union with accurate information, and what is more, sees that those in charge of his affairs in the local are not only competent but willing to impart that knowledge to the central body, so that they can answer the demands made on them by their agents, he, the grower, is primarily responsible for blocking the track and is seriously handicapping his own business. Another place that the grower fails is the inability of so many of them to realize that some of the individual schemes for selling, while successful on a small scale, would not be adequate to move the whole crop of the Northwest.

A familiar simile might be made by comparing some of these plans to the old story of the man who went into the chicken business. One hen lays one egg every day for 220 days—220 eggs. Two hens lay two eggs every day for 220 days—440 eggs. Ten thousand hens lay 10,000 eggs every day for 220 days a year—10,000x220 eggs per annum. Eggs worth 45 cents per dozen. Result —affluence(?) Exploded theory. It does not work out in actual practice. We who believe in organization do not decry the effort of the individual to make the best bargain he can for his crop, but we do believe that for the ultimate and lasting good of the industry, that man's brains and intelligence would be put to better use if thrown into the common jackpot and used to solve our difficulties in a broader and larger way. If everyone of us was to return to the old ways of individual effort, not one of these plans would be successful, and their success now is based upon the fact that their neighbors are stabilizing conditions and carrying them along as a dead weight at no cost to the independent operator, but at a serious cost to the future success of the business as a whole.

To return to the matter of records. It is absolutely necessary that the central body be kept posted in all the details as to quantity of fruit to be disposed of, condition of fruit at all times, and any other information that the central body may require. These estimates should be sent to the central body as early as possible in the season, in order that the f. o. b. market can be thoroughly combed and supplied. Manifests of cars shipped must be forwarded promptly, so that the traffic department can keep close and intelligent watch on the progress of shipments from loading point to destination. By this means diversions can be accomplished promptly and many advantageous sales made that otherwise would be lost.

Without direct and correct information from the local, the central body has to work more or less in the dark, and therefore, more or less inefficiently. To many individual growers, and to many local units, the persistent demands made on them by the central body seem unnecessary. They are not so. The German army, in the the unfortunate affair that is now taking place in Europe, has proved to the world at large that efficiency in the petty details is worth while. Our position is very much akin to theirs. We are fighting for our existence. We have pitted against us the desire on the part of the

dealer to make as much profit as he can. The public's diversified taste for other fruit commodities, such as oranges, bananas, grapes, etc.; the efforts of the producers of these other articles to supplant us in the public favor; the desire inherent in ourselves to get as much money for as little effort as possible.

The first few obstacles to our success cannot ever be eliminated totally, but the last mentioned, our own weakness, can and must be eradicated. Until we, us growers, realize that it is our business that is being taken care of; until we realize that it is not sufficient to select a theory or plan and lie back in the traces and let the other fellow pull the load, all out attempts to solve the marketing problem will be wasted energy. I once had occasion to discuss local difficulties with one of the members of our union. His complaint was that "they"—meaning the directors—"did not do this," and "they did not do that," and "they did not do the other thing." I endeavored to explain to him that they—the directors—could only advance as far as the membership were willing to advance with them, and that the habit of electing a board once a year and then going back to the ranch and refusing to comply with the rules and regulations adopted by that board was the main cause of failure on the part of so many local organizations. My advice to him was that in the future he would substitute the word "we" for "they," and include himself in the general criticism. So, with the connection between the local and the central or selling body, unless the response is generous, unless the demands made upon the local are promptly responded to, we find forces opposing instead of helping one another. The local that is not up to snuff and that does not obey orders from headquarters is on a par with the mechanic who throws a monkeywrench into a piece of delicate and complicated machinery while in motion.

There is time during the year when a review of the situation by a joint meeting of the heads of the central and locals is invaluable, but during the operating or selling season any hesitation or inefficiency on the part of any branch or unit can only be disastrous to the plan as a whole. There is no plan today that is on record that pretends to be perfect. My own belief is that there never will be a time that some improvement cannot be effected. I believe, however, that there are sufficient well-grounded theories extant to build on. I would therefore suggest that the great body of apple growers spend more time in mastering the details of the plans now before them, and by practicing, each and every one of you, the principles of sane co-operation, help to advance slowly but surely along the lines as already mapped out. If we would use intelligently and to the fullest extent the means now at our disposal, I believe that our troubles would be materially decreased.

There has been considerable outcry as to the necessity of the marketing heads getting together. If the time of the heads of these agencies was not so taken up keeping the individual grower in line and instilling into his system the first principles of business, there would be a greater opportunity to progress along those lines. Have you ever seen a horse get his leg over a trace? The horse is young and skittish. The only way to get his leg back is to unhook the trace, but the unfortunate teamster is so busy holding the fool horse by the head that he cannot do the one thing that he knows should be done. So with the apple marketing situation. If the grower would stand still and work for the general good of the industry our difficulties would be minimized.

Remember, at no time, nor under any plan or theory, are all our troubles and drawbacks likely to be removed. We can always look forward to obstacles

to overcome, vexed questions to solve. Personally, I believe that these trials, like a few fleas on a dog, are good for us. Appledom will never be Lotus land. Intense and keen interest in our business will always be necessary. Individual effort will receive its reward or its punishment in proportion to its deserts. The millenium is a long way off and not likely to be reached in our time. But I do believe that the apple industry, with a portion of the acreage eliminated and a greater portion of the brains and energy that are conected with it diverted into broader channels, can and will be preserved as a business that will be a cause of pride and a source of profit to the Northwest.

Northwestern Fruit Exchange Crop Prospects

United States

Northwest—Wenatchee Valley: Indications point to the following tonnages: Apples, 4,000 to 4,800 cars; pears, 300 to 350 cars; peaches, 150 to 250 cars; apricots, 80 to 100 cars; plums and prunes, in the neighborhood of 25 cars. Yakima Valley: Apples, 3,600 to 3,800 cars; pears, 800 to 900 cars; peaches, around 1,000 cars. Rogue River Valley: Apples, 300 to 350 cars; pears, 250 to 400 cars. Hood River District: The Hood River District appears to be less than a normal year and it is expected that the district will produce from 850 to 900 cars of apples this coming season, with pears running from 50 to 75 cars. Walla Walla: 200 to 225 cars of apples. Spokane: 300 to 400 cars of apples. Southern Idaho: Some reports relative to the apple tonnage this season from Southern Idaho indicate a crop of about 600 cars, while others estimate that the tonnage will come to 1,000 cars or even more, the former estimate, however, being considered more nearly correct. It is expected the output of prunes will amount to about 1,000 cars. For peaches it is expected that some 200 or 250 cars will be shipped. Montana: Apples, about 50 cars.

New York—Blossoms were scarce on Baldwins, possibly because of last year's heavy crop. Present indications point to a shortage of about 4,250 cars in the combined peach and apple crops. Peaches will move between August 15 and September 15.

Michigan—A normal crop of early apples is expected, with about a 60 per cent crop of the fall varieties. Peaches considerably above normal. Pears fair.

Georgia—Estimated that 4,000 to 4,500 cars of peaches will move in the period from June 1 to August 25. Last year's shipments totaled 4,020 cars.

Ohio—Estimates of peaches indicate a yield of 2,500 to 3,000 cars, moving from September 1 to 20.

Virginia and West Virginia—This season's apple crop is expected to be light. Virginia is estimated to produce about 1,315,000 barrels. West Virginia will be particularly light.

Connecticut — Huge peach crop expected; estimated from 1,500 to 2,000 cars. Ten days earlier than last year.

Courtesy of Western Fruit Jobber

Loading Bananas

Nebraska and Iowa—Conditions favorable for large crop of apples, pears and peaches.

Texas, Oklahoma, Arkansas and Missouri—Following peach tonnage estimated from the Southwest: Texas: 2,000 cars; early varieties now moving; Elbertas to move from June 25 to July 25. Oklahoma: About 2,500 cars; July 20 to August 15. Arkansas and Missouri: From 2,500 to 3,500 cars, moving from July 20 to August 15. Estimates from the Ozark region for apples are meager, those received merely indicating that the crop is progressing favorably.

Colorado—All fruits greatly damaged by a severe freeze early in May. Indications point to the fact that the Grand Junction district will have but 12 to 15 per cent of a normal crop, although the district around Cañon City (on the Eastern Slope) will produce a large crop. The apple crop for the whole state is estimated to be 3,000 cars; pears 150 to 200 cars; peaches 1,000 cars, the latter moving between August 15 and September 15.

New Mexico—Apple bloom damaged by heavy rains. Crop small, estimated at 200 cars, which is one-half of last year's crop.

California—Pajaro Valley: Apple crop estimated at 75 per cent of 1914 crop. Sacramento District: Owing to heavy rains during May cherries were severely damaged, probably to the extent of 50 per cent. This, while not reducing other fruits, nevertheless delayed maturity, particularly of apricots. Indications point to a heavy pear and peach crop, plums slightly less than 1914, apricots about the same as 1914.

Canada

Apples—Estimates for Nova Scotia under date of May 21 indicate a crop of 2,000,000 barrels this season, as compared with 800,000 for 1914. However, fruit is reported being backward and retarded somewhat by frosts, two having occurred in this district during the week following May 16. Conditions in Ontario and Quebec at this time are reported to be favorable. British Columbia on June 15 reported that the crop will run slightly less than last year, the estimated production for the coming season being from 1,100 to 1,200 cars. Old trees are bearing lighter than last year, but which is somewhat offset by new trees coming into bearing.

Pears—In Nova Scotia and Eastern Canada it is expected that the pear crop will be about normal, not differing much in tonnage from the crop of last season. In British Columbia an increase of some 25 per cent is expected over last year, from 50 to 60 cars being expected to move out this season.

Peaches—Peach prospects throughout Canada appear fairly bright. In British Columbia it is expected that the production of all varieties will be equal to, if not slightly greater than, the tonnage of 1914. Elbertas are light. Peach movement expected July 20 to October 15.

Plums and Prunes—Will be in heavy tonnage in Eastern Canada if present conditions do not change materially. In Western Ontario particularly a heavy crop of plums and prunes is anticipated; in British Columbia about 100 cars of plums and prunes is looked for.

"Skookum" is the name of a brand that was adopted two years ago by the Northwestern Fruit Exchange as an inter community brand to be used on high-class varieties of apples that are packed according to certain requirements in the different districts of the Northwest in which the Northwestern Fruit Exchange are operating.

Development of Fruit Package

Continued from page 6.

urally the industry has become more greatly developed in some sections of the country than in others, namely, Michigan, Georgia, New Jersey, Delaware, Virginia, etc. In earlier times various sized packages were used in shipping the peach even to the same markets; generally this package was some form of basket. During the later development of the peach industry uniformly sized packages were used in the same market for the same grade of fruit.

For the early peaches a different package was used; there was also a different package used for the extra fancy grades. At one time the best and favorite package was the standard five-eighths bushel basket, without top or cover. For fancy fruit some were covered with muslin, and on others wooden tops were used, being a later idea. This enabled the baskets to be packed without danger to their contents. Another package is the crate of wood, seven-eighths bushel, with two compartments of equal size. These packages were used chiefly for the Baltimore market, where they were popular for some varieties of peaches. Small fancy baskets holding one gallon or six quarts each are generally packed in 32-quart berry crates, which hold either eight one-gallon baskets or six six-quart baskets. These were very commonly used for extra early or extra fancy fruit. In some localities the Delaware half-bushel veneer basket and the Michigan handle basket holding about a peck are largely used, but these have mostly given way to the six-basket or Georgia carrier. A relatively new package which has come upon the market is the Climax, with slatted cover, extensively used as a grape basket. This package has found some favor, as it is attractive and handy to carry home. The peach package generally used in the Pacific Coast states has been the box rather than the basket. The sizes of the boxes used have in the past showed a great difference, but at the present time the favorite package is what is known as the California peach box, which holds less than a half bushel or about 21½ pounds. The peaches packed in this box are nearly always wrapped in paper and stand shipment very well. This package has been a very attractive one and has displayed the fruit well. Within the past season of 1914 quite a bit of interest has been shown by peach shippers and also by receivers on different markets in the bushel basket for packing and shipping fruit. It is declared by many that this package is much more satisfactory to handle than other forms and also that the fruit shows up in better condition when shipped in this container. The big crop now in prospect in Alabama, Georgia, Texas and other Southern states is bringing the subject of packages before the trade and shippers and arrangements are now being made for the handling of the crop.

Growers at different points are discussing the package question. Many prefer to pack in the bushel basket in-

stead of the six-basket carrier. It seems as though the bushel basket has not until lately been considered safe to ship the fruit in, but with the good results obtained last season it will undoubtedly take the place of the six-basket carrier more and more. The best and most practical way to pack peaches for shipment in bushel baskets to assure them arriving at destination in perfect shape, receivers state, is to nail strips on either side of the car, so that by placing a three-inch board across for each tier a natural shelf is formed which keeps each tier of baskets separate, and protects them from being jammed together by the rocking of the car. In this manner four separate shelves are made running the full length of the car, which will accommodate about 400 bushel baskets. The baskets should be lined with paper and have good strong covers and be made with a pole in the middle to prevent the covers from sinking in and mashing the fruit.

In the Northwest and in California the package used is the California standard box, the dimensions of which are 11¾ by 18¼ by 4, 4½ or 5 inches, inside measurement. Sooner or later this package will probably be replaced by the bushel peach basket, which is proving to be the most economical package in which to handle the peach crop.

The packages used for the marketing of plums seems to vary as widely as the packages used for the other fruits. Very little is known of the past history of the plum package, due to the fact that the plum industry is limited to a few favored districts. There has been but little written in regard to the various packages in which this fruit is marketed. In many of the articles on fruit growing the subject of the package for the plum is dismissed with the statement that the same package is used for the plum as for the peach. This is largely true. Some of the different packages in which fruit is handled are in Vermont. The plum is marketed in both the peck and the half-bushel box. In Massachusetts the round Delaware basket and the old Climax grape basket with slatted cover are used, and to a limited extent they are placed in strawberry baskets in the usual strawberry crates. In New York plums are sold for the most part in Climax, in the six-basket carrier.

The style of the package used in marketing plums varies somewhat with the preference of the different markets. Some prefer the 10-pound handled basket frequently used in marketing grapes, others want the 32-quart berry crate, but the greatest demand of the Eastern markets is for the six-basket carrier used for packing peaches.

In the Northwest the tendency to use a uniform package is much more pronounced than in other sections of the country. The grade rules for the North Pacific Fruit Distributors, season 1914, are as follows: "Prunes and plums should be packed in four-basket prune crates. Fruit too small to pack 6x6 should never be packed in prune crates and should only be shipped in 3½-inch peach boxes paper lined. Whenever

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possible use the square pack. Pack all Tragedies and Italians three tiers deep, stem end down; pack top tier with creased side up and all the same way. Hungarians, Bradshaws, peach plums and similar varieties that pack smaller than 5x5 in prune crates should not be packed."

The package which is coming into use and popularity on the markets and among the merchant men is a variation of the four-basket crate that is now on the market. The new package is of two tiers, one above the other, and having two baskets to the tier. This package is very conveniently handled and can be carried with ease, and forms a very desirable "take-home" package, as it can be carried as a suitcase.

The measurements for the Northwest standard plum and prune package are 18½x11½x2½ or 3¾ inches.

In regard to giving any definite size of package for cherries little can be said, as the style of the package used varies widely. A few things which are essential are: A shallow box to avoid weight and consequent bruising; free ventilation; a gentle pressure to prevent jostling; convenience in packing, and an attractive package. In the past the 30-pound cherry box has been widely used, but it is doubtful if this package furnishes sufficient ventilation. Cherries go to market principally in two kinds of packages, either in strawberry boxes and crates, or for the fancy Western cherries boxes varying in capacity from eight to thirty pounds. Many growers say that the 10-pound box is the most handsome package and carries almost as well as any. The Okanogan, Washington, Fruit Union, which ships considerable cherries, has obtained the best results from the use of the 10-pound box, especially for long distance shipping. For short distance shipping the 20-pound box can be used to advantage sometimes, as it costs less money for grocers' trade, where the fruit is weighed out by the pound. For sour cherries a strawberry hallock is used and the cherries are faced on the top of each hallock. The 5-pound tin top box which contains four crates is often used for shipping and has much to recommend it, for it is convenient and gives good ventilation. The ordinary cherry crate which holds twenty-four 1-pound hallocks is also much used; it gives good ventilation and is of convenient size. The hallocks should be a little less in depth than for strawberries. This is probably the package for the cherry that will be used more and more in the future, as it is comparatively cheap, does not have to be packed, and affords an individual package for each purchaser on the market. Another advantage is that if the fruit of any one of these boxes should become damaged it could be removed, and thus the repacking of the whole crate is avoided. As early as 1900 the paper carton holding about one pound of fruit was thought of as an important package for the cherry. This is a very attractive one, especially for a fancy fruit trade. In later years cartons were made of straw

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and various other materials, which took well in some of the markets. The main objection to the paper carton is that it lacks in convenience and ventilation. It has not come into general use, as was once hoped for. The whole question of the fruit package for the cherry is unsettled and it will probably be some time before any package will be widely adopted. Some of the dimensions of the package of the cherry are:

10-lb. cherry box—18½x9x2½ inches.
20-lb. cherry box—18½x11½x4 inches.
The California box—2¾x9x19¾; wt. 11 lbs.

We hope to have made fairly clear the progress that has been made up to the present time in the various fruit packages. There still remains a great deal yet to be done before the proper packages are selected. New packages are constantly being introduced, but most of them are soon discarded. This has not only worked a hardship upon the box manufacturer, but also on the producer and the consumer. At the present time there are entirely too many packages for the same kind of fruit on the market, and any new package introduced should be viewed with suspicion until its merits have been definitely proven; after this there is plenty of time to adopt the package, and much loss would be avoided should the package prove unsuccessful. The different markets have certain types of package that are more acceptable in that market than other packages. The fruit growers raising fruit for some certain market should make a study of the demands of that market and conform as nearly as possible to them. Extra fancy and extra early fruit will probably be continued to be shipped in different kinds of packages than the later fruit, they being more attractive, smaller, and probably more expensive.

The main tendency during the past few years, in the matter of packages, has been uniformity and standardization. This has been a desirable move. The box consumer requires a safe and secure package which will secure delivery of his goods at destination in good order. The size must be sufficient to accommodate the product to be packed therein and must provide for ready packing. The cost of the container must not bear an excessive ratio to the cost of the contents. Containers must be limited in size to conform to easy handling, standard units of measure, and weight of articles per unit of bulk. Standardization will often provide a ready interchangeability of box parts and thereby afford the consumer an advantage. Standardization of boxes prevents waste of lumber and permits manufacture in advance of orders. It insures against faulty packing and guarantees against the loss of commodities through breakage and damage. Uniformity of containers protects the consumer of boxed commodities from false measure and protects packers and shippers from unequal competition resulting from the differences in the quantity of commodities furnished. This is especially a factor for consideration by the fruit trade. It promotes satisfaction and equality in the trade and eliminates unscrupulous practices.

The necessity for co-operation among the fruit growers in various districts is becoming more and more felt. This movement has and will continue to have considerable influence toward the standardization of the fruit package. In California the California Fruit Growers' Exchange and in the Northwest the Northwst Fruit Distributors have done a great deal toward the standardization of the packages, as they have set forth certain definite rules as to the package specifications of the fruit which they handle.

Any legislation with the idea in view of compelling fruitgrowers to pack their fruit in definite sized packages is doomed to failure. This can be shown by look-

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ing through the state laws of many states and finding laws which are dead and no attempts have been made to enforce them for many years, they being impracticable. The important point about any legislation would be the matter of quantity and it might be well to say that there is a decided tendency at present time to require a statement on the container of the net contents, stated in terms of weight or numerical count. In fact the new federal law requires on all interstate shipments that the contents be so stated. No provision is made however, as to the shape of the package. One of the greatest dangers in standardizing packages or products is the legislature, as they may pass measures that are impractical for the fruit growers to live up to. Standardization must be simple and legislation must take place only after the public opinion is with you.

The Eternal Question

"What I would like to know," explained the agriculturist patiently, "is what I need in the way of new tools and new buildings and new ideas. Tell me why my wife keeps complaining and telling me she's tired of farm life and wants to move into town? I don't want to go to town."

This isn't a fairy story. It isn't fiction. It isn't even a story about a distant land. It happened in the Middle West, in the East, in the Far West. It's happening today, everywhere.

The agriculturist was up to date. He had a first-class farm. He rotated his crops. He kept the soil fertile. He had good machinery and treated his men well and his livestock well. For the heavy work he had motor-driven machinery. His pumping was done by motor. He had an expensive silo. He kept his roads in good repair. He had quit borrowing money and was investing money instead, most of it in the farm, but a good deal in securities. It was a paying farm.

And yet his wife wasn't satisfied.

The farmer's friend went into the farm house to see what could be the matter. The house was clean and well kept, but the housewife looked tired. In one corner was a sewing machine. The window beside it looked out on the motor-driven pump.

"Where's the motor for that machine?" inquired the friend.

"Motor?" said the farmer; "there isn't any. My wife runs it."

In the laundry were the tubs hanging from the wall, an ironing board, an old range which had passed its period of usefulness as a cookstove and had been exiled to the laundry.

"Ever try washing machines and all the other kinds of laundry machinery?" inquired the friend.

"No," said the farmer. "My wife does that."

"I notice you don't have electric lighting here."

"No," said the farmer after a pause. "Lamps. My wife takes care of them."

The visitor had a lot of comments as he went through the rest of the house.

Then he went outside and pointed to the gasoline vehicles, the motor pump, the utilized water power, the examples of ways in which the up-to-date farmer made machinery do 90 per cent of the work that the men used to do.

"Think it over," he said with a grin. "How much of all your machinery is being used to help your wife? How much better off is she than the farmer's wife of fifty years ago? And think of how much less work you have to do than would have been necessary even twenty years ago. Is it fair?"

At the San Diego Exposition they have a building called the "Home Economy Building," which is calculated to show that drudgery is not necessary; that invention, which has brought about the mechanical speed of farming, has also brought about the mechanical speed of housekeeping. In one section of the Exposition grounds is located the model bungalow which is equipped with motors which operate the kitchen, the laundry, the sewing machine, the cleaning apparatus for floors, windows, walls and furniture. This exhibit does much in the way of showing us how to keep the girl on the farm.

The Cashmere League, Cashmere, Wash., has re-elected the following Board of Directors: Robt. Griffith, Wm. Grigg, Thos. Larson, Frank Shelton, H. G. Bohlke. One hundred and twenty-six members and growers attended the election.

The Fruitgrowers' Wife

Don't waste time scrubbing a sink with scouring powder. The use of kerosene is more efficient and will not hurt the enamel.

* * *

A zinc-covered table in the kitchen will save work for the housewife. A zinc cover is easily put on and needs only to be wiped off.

* * *

The kitchen should be arranged so as to eliminate unnecessary steps. A very good idea is to have a shelf over a table within easy reach and the utensils that are the most often used hanging underneath, and on the shelf the condiments, salt, etc., and such other materials as are used in cooking.

* * *

For those who have electricity in their homes a motor attachment to the sewing machine will do much to simplify the work in the sewing room. There is no work in the world that is so hard on a woman as running the sewing machine, and there are very few fruitgrowers but what can afford to have a motor attachment to the sewing machine.

* * *

There are many convenient and economical electric appliances for the house which simplify the work. An inexpensive electric cooking stove is now made that will do much to lessen the work and keep the house cool in summer. In connection with an electric

stove a fireless cooker is very essential and will lessen the fuel bills. Vacuum cleaners are becoming a necessity in the household instead of a luxury. They not only take up the dirt but it is entirely done away with, and if operated by electricity the weekly cleaning day will not be dreaded by the housewife.

* * *

Every fruitgrower should see that his wife is provided with a power washing machine. In this way lessen the horrors of wash day, changing "blue Monday" into "sunny Monday." There are many different makes that can be operated by different kinds of power,—hand power, gasoline and electricity. For those who have electricity in their homes an electric washer is the most satisfactory and can be operated for a few cents an hour. An electric iron can be obtained from three to five dollars, which makes ironing much easier and does away with having a fire in the cook stove in warm weather.

Attracting Birds

It is possible with a little care and forethought to attract birds about our dwelling places, adding thereby not only to the cheer, but providing one of the best means of protecting our gardens and orchards from the ravages of insects. One of the easiest birds to attract is the Mountain or Arctic Bluebird, on the east side of the mountains; and the Western Bluebird on the west side. These birds are invited to remain with us not so much by the planting of slow-growing shrubs and vines as by erecting bird houses for them. Even on the treeless prairie this form of invitation will usually induce them to remain throughout the nesting season. Naturally, they nest in holes in trees or cracks in buildings, sometimes in the most unexpected places, states Professor W. T. Shaw, zoologist of the State Experiment Station. I once knew of a pair to nest in the tool box of an old abandoned reaper. Consequently, anything in the form of a box of the proper dimensions, furnished with a hole of sufficient size to admit the bird, will be used by them.

A suitable bird house may be made by converting a small box into one. A box six or eight by ten inches is one of about the right dimensions. In one end, about two inches from the floor, a hole should be made, two and one-quarter inches in diameter. This may be cut flat in the bottom and arched. The box may be made still more attractive, not only to the birds, but to the owner of the place as well, by being covered with strips of bark sawed from yellow pine or fir. The door might be furnished with a little step of sound bark.

The box should be placed at least ten or twelve feet from the ground. It is well to locate it near a building, as under an eave. It may be made to furnish endless enjoyment for the children by placing it close to an upstairs window.—Bulletin 138, Washington State Agricultural Experiment Station.

The Value of Milk as Food

In the educational exhibits of the Iowa Dairy and Food Department different articles of food are on exhibition and placards stating the cost of each as compared with one quart of milk. In one exhibit the following information was given:

A quart of milk, costing 8 cents, is equal in value to any of the following:

Seven ounces of full-cream cheese costing 9½ cents.

Ten eggs costing 20 cents.

Eleven ounces of fat round beef costing 15 cents.

Fifteen ounces boneless codfish costing 14 cents.

Six and one-half ounces white bread costing 2½ cents.

Five ounces of cornmeal costing 1 cent.

Nine and one-half ounces of potatoes costing 2½ cents.

Four pounds and two ounces of cabbage costing 10 cents.

Five ounces of dried beans costing 2 cents.

Eight oranges costing 23 cents.

One dozen apples costing 9 cents.

Five bananas costing 5 cents.

Six and one-half ounces of prunes costing 6 cents.

Four and one-half ounces of walnuts costing 17 cents.

A few good books that have been issued recently:

"Citrus Fruits," by J. E. Colt, published by MacMillan & Co., New York.

"An American Fruit-Farm," by Francis Newton Thorpe, published by G. P. Putnam's Sons, New York.

"Farm Management," by G. F. Warren, published by MacMillan & Co., New York.

"Manual of Fruit Insects," by Slingerland & Crosby, published by MacMillan & Co., New York.

"Management and Breeding of Horses," by Merritt W. Harper, published by Orange Judd Company, New York.

"Management and Breeding of Sheep," by Thos. Shaw, published by Orange Judd Company, New York.

"California Fruits and How to Grow Them," by E. J. Wickson, published by Pacific Rural Press, San Francisco.

"American Fruit Cultivist, 21st Edition," by John J. Thomas, published by Orange Judd Company, New York.

"Fungous Diseases of Plants," by Benj. M. Duggar, published by Ginn & Co., New York.

"The Potato," by Grubb & Guilford, published by Doubleday, Page Co., New York.

"Productive Orcharding," by Professor F. C. Sears, published by J. B. Lippincott & Co., Philadelphia.

"The American Peach Orchard," by F. A. Waugh, published by Orange Judd Company, New York.

"How to Make an Orchard in British Columbia," by J. T. Bealby, published by Adam and Chas. Black, London.

"The Work of the Rural School," by Eggleson & Bruere, published by Harper & Bros., New York.

"Insects of Economic Importance," by Glenn W. Herrick, published by Carpenter & Co., Ithaca, New York.

"Key to the Families of North American Insects," by A. L. Melander, Pullman, Washington, and Chas. T. Brues, Harvard University, published by the authors.

A list of publications for fruitgrowers who are engaging in diversified lines:

American Swincherd, Chicago.
Gleanings in Bee Culture, Medina, Ohio.
Kimball's Dairy Farmer, Waterloo, Iowa.
Hoard Dairyman, Ft. Atkinson, Wisconsin.
Northwest Poultry Journal, Salem, Oregon.
Breeders' Gazette, Chicago.
Rural Spirit, Portland.
Angora Journal, Portland.

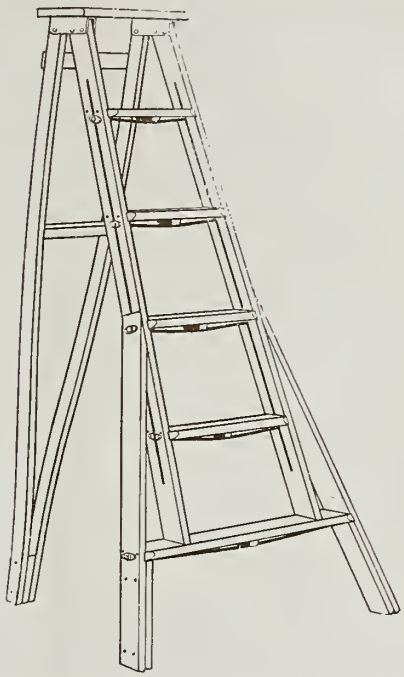
Barnett Picking Pail

Made of heavy galvanized iron. Has a canvas sack lining with patented opening and closing device. If you like a picking pail you will want a Barnett.

Price, each $1.50
dozen lots 16.50

These are but three of the articles shown in our new catalog of orchard and packing house supplies. Write for this catalog. We have the goods you need at the right prices.

Hardie Ladder



Only well seasoned spruce used in its construction, with each step braced. Strong and rigid, it weighs but 3 lbs. to the foot. A thoroughly high grade orchard ladder made in from six to fourteen foot lengths.

Price, per foot 35c

Portland Picking Bag

A strong canvas sack with broad shoulder straps. Does not tire the picker and enables him to use both hands in picking. Easily and quickly emptied A speedy and economical device for every orchard.

Price, single bag $1.50
dozen lots 15.00

The Hardie Manufacturing Co.,

49 North Front Street
Portland, Oregon

IMPORTANT INFORMATION FOR THE FRUIT GROWER

If about to Build a Fruit Packing House, a Warehouse, a Cooling or Cold Storage Plant, or a Home

Buildings for the Handling or Storage of Fruit should be designed to afford the greatest possible protection against extremes of weather—hot or cold. Packing Houses should be constructed so as to maintain a uniformly cool temperature in Summer and Fall because the fruit as it comes from the orchard contains a great deal of heat. This heat should be reduced to the minimum before the fruit is packed to insure its reaching the consumer in the best possible condition. The lower the temperature of fruit when packed, the better it will stand up under refrigeration and the longer it will keep in and after cold storage.

To Obtain the Above Results Use Insulation

and apply it according to the specifications of our specialists who have had fourteen years' experience with these problems. They will recommend the use of LITH, LINOFELT or FIBROFELT, whichever is best adapted for your requirements, and will send you plans of construction. Our insulation is used in lining the largest cold storage plants and by the leading refrigerator transit railroads. Nearer home we have furnished plans and insulation to C. A. Congdon and the Fruit Growers' Warehouse Company, both of North Yakima, Washington.

Tell us what you want to accomplish and we will show you how it can be done.

Union Fibre Company, Winona, Minnesota

Brown & Bingham, Western Agents, 439 Van Nuys Building, Los Angeles, California